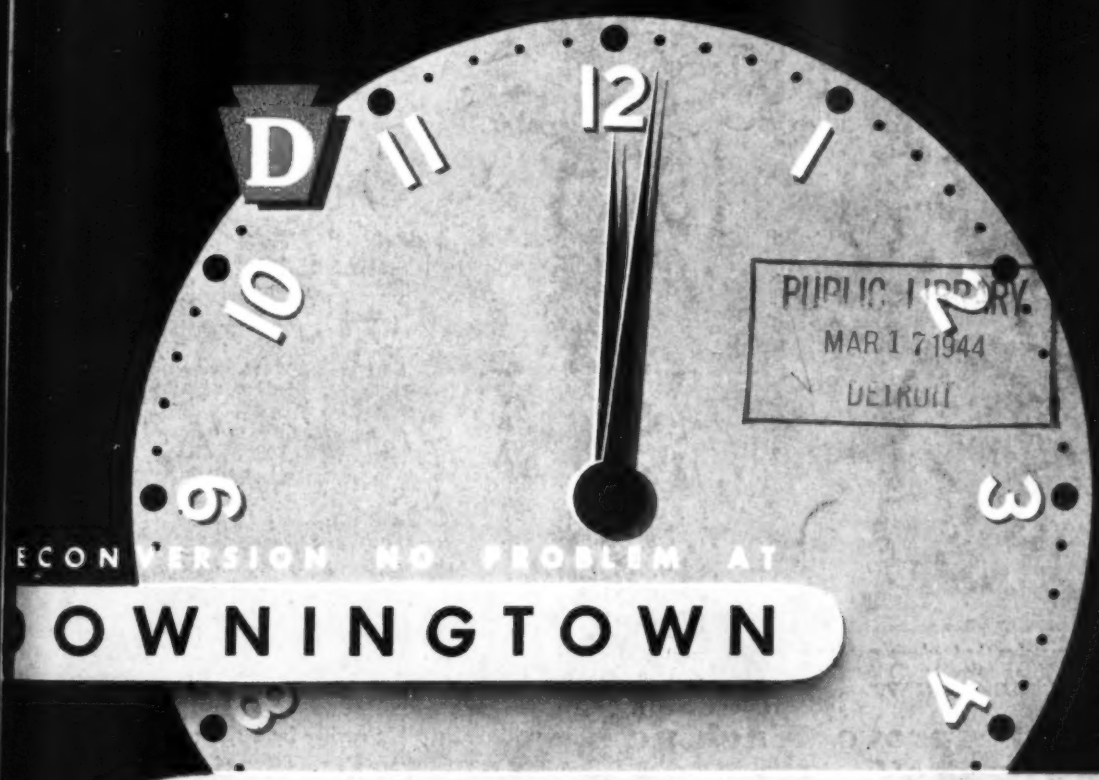
SILVER ANNIVERSARY NUMBER

# THE PAPER INDUSTRY and PAPER WORLD

EDUCATIONAL NEWS MAGAZINE — MARCH, 1944

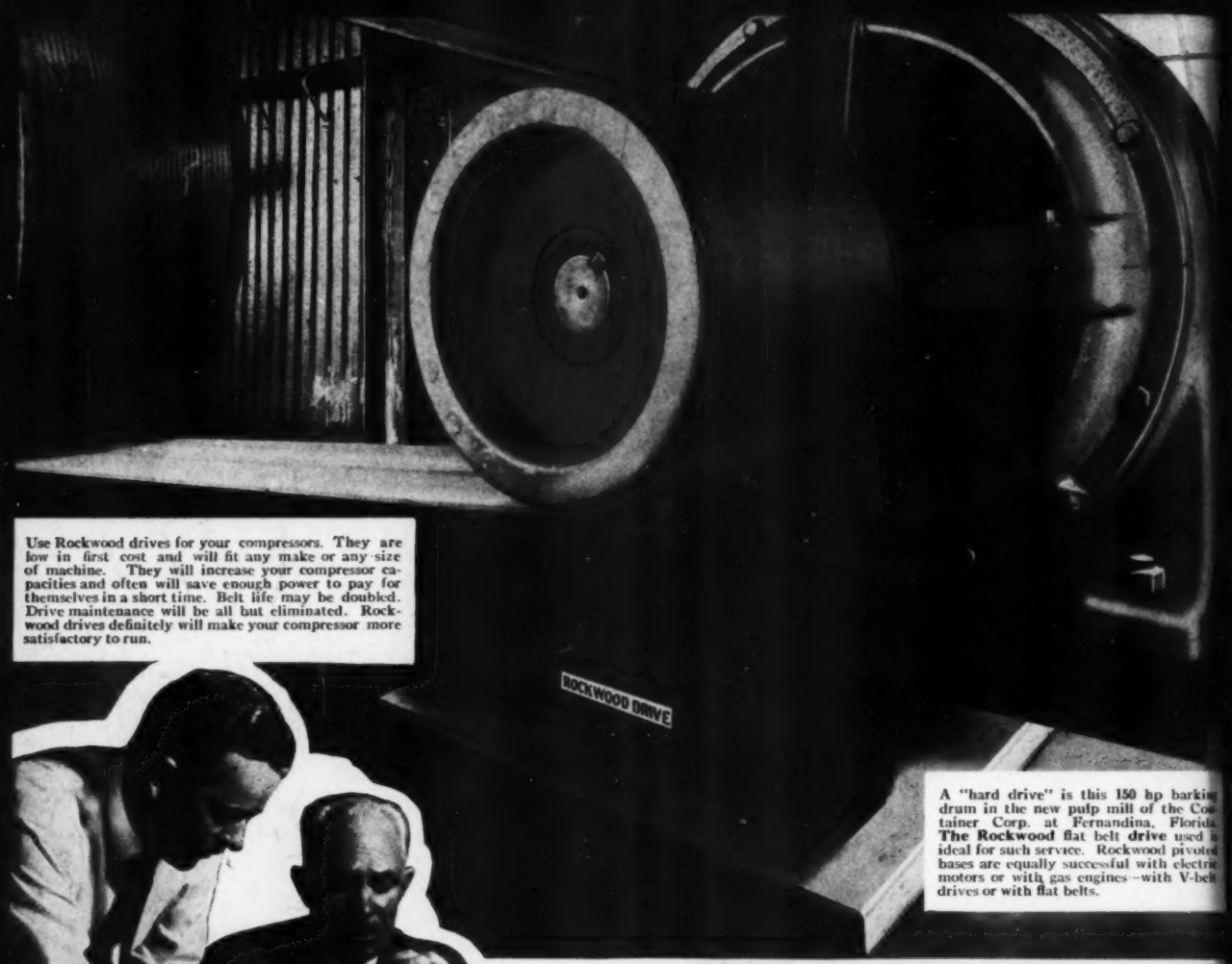
CHNOLOGY DEPT. 1919—1944




ECONVERSION NO PROBLEM AT
OWNINGTOWN

ONE MINUTE • *War Machinery*
NEXT MINUTE • *Paper Mill Machinery*

Reconversion is no problem with us; it's simply a matter of issuing orders and blueprints to our Pattern Shop, Foundry, Machine Shop, etc. . . . Of course, we've added many new, modern, precision-production machine tools and other equipment to increase our war machinery output, BUT everything we've added will remain to help us build even better paper mill machinery. We can be ready to start manufacturing your new or replacement machinery needs in a minute after our government permits us to do so. . . . But we can't start manufacturing until designs and specifications are determined. The sooner you consult our engineers, the sooner you place your order—then, the sooner you'll get your machinery. . . . The Downingtown Manufacturing Company, Downingtown, Pennsylvania.




Use Rockwood drives for your compressors. They are low in first cost and will fit any make or any size of machine. They will increase your compressor capacities and often will save enough power to pay for themselves in a short time. Belt life may be doubled. Drive maintenance will be all but eliminated. Rockwood drives definitely will make your compressor more satisfactory to run.

A "hard drive" is this 150 hp barking drum in the new pulp mill of the Container Corp. at Fernandina, Florida. **The Rockwood** flat belt **drive** used is ideal for such service. Rockwood pivoted bases are equally successful with electric motors or with gas engines—with V-belt drives or with flat belts.

# ROCKWOOD *automatic belt tightening* MOTOR BASES

*"The belt tightness matches the load—increasing when the load increases—falling off when the load falls off —and AUTOMATICALLY."*

## "They Improve Machine Performance"

"You recall chief you have always said we will do anything that gives us improved machine performance and does not take too long to pay for itself. Well, that's exactly what these Rockwood automatic belt tightening drives will do for us."

"Our beaters, vacuum pumps, belt driven Jordans, compressors—all will operate at maximum speeds—with less attention—and less work for our maintenance crew. The machines will do more and better work and we will make a big saving by buying fewer belts and saving some power. Every drive will, I think, pay for itself in less than a year."

"We have them on 4 beaters now and are going to put them on the others as soon as the present belts wear out. Same with all belted electric drives thruout the mill."

"And we get good service on the bases, too. They have them in stock to 60 h.p.—in semi stock to 250 h.p.

IF YOU HAVE A DRIVE PROBLEM THAT NEEDS CORRECTING WRITE US.

**ROCKWOOD**
INDIANAPOLIS • U.S.A.
*Specialists in Power Transmission Equipment Since 1884*

*Rockwood are the world's largest manufacturers of p —with 1,447 stock sizes ready to ship. Their stoc V-belts and V-belt sheaves are enormous—even t With 7,889 stock sizes of V sheaves—and every siz length of V belts. A large percentage of which is for immediate delivery.*

## UNDER THREE FLAGS....

Not boastfully, but with a real sense of contribution toward the war effort, Beloit workers display these flags. Ever since 1858, when Beloit cast its first machine part, teamwork has been an outstanding Beloit characteristic. So it was only natural that these wartime banners should appear beside the Stars and Stripes when the real need arose. Beloit has met many a challenge, intends to live up to this biggest one of all!

*Buy War Bonds for Victory!*

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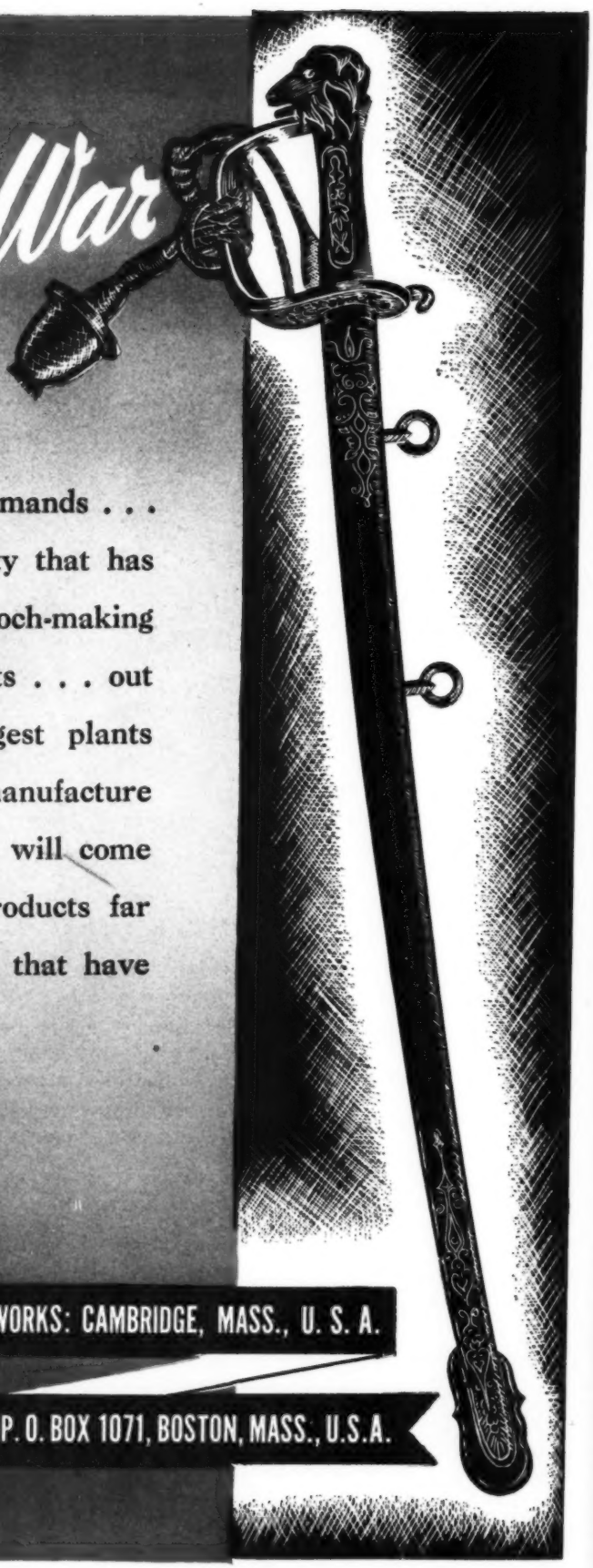
# BELOIT

BELOIT IRON WORKS, BELOIT, WIS.

WHEN YOU BUY BELOIT . . . YOU BUY MORE THAN A MACHINE

# WHEN THE *Sword of War* IS SHEATHED



Out of war's insatiable demands . . . out of experience and ability that has made rubber history in epoch-making inventions and improvements . . . out of one of the world's largest plants devoted exclusively to the manufacture of mechanical rubber goods, will come belting, hose and similar products far surpassing the world's finest that have come so far.

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TECHNOLOGY DEPT.

# WRAPPING UP A CYCLONE

"GENERAL Utility" might well be the name for paper in this war. There seems to be no limit to its usefulness... from wrapping aircraft engines to making gasproof bags for the armed forces.

Meeting the varied demands for paper under wartime conditions requires highly efficient mill operation, and a big help here is the use of Texaco.

In drier sections and calenders, for example, *Texaco Ursa Oils* assure normal bearing temperatures under all operating conditions, with clean, cool oil to every bearing in the system, carrying away the heat.

So effective have Texaco lubricants proved that they are definitely preferred in many fields, a few of which are listed on the right.

Texaco Lubrication Engineering Service is available to you through more than 2300 Texaco distributing points in the 48 States.

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

## THEY PREFER TEXACO

★ More Diesel horsepower on streamlined trains in the U. S. is lubricated with Texaco than with all other brands combined.

★ More locomotives and railroad cars in the U. S. are lubricated with Texaco than with any other brand.

★ More revenue airline miles in the U. S. are flown with Texaco than with any other brand.

★ More buses, more bus lines and more bus-miles are lubricated with Texaco than with any other brand.

★ More stationary Diesel horsepower in the U. S. is lubricated with Texaco than with any other brand.

TEXACO

## TEXACO Lubricants

FOR THE PAPER INDUSTRY

TUNE IN FRED ALLEN EVERY SUNDAY NIGHT—CBS ★ HELP WIN THE WAR BY RETURNING EMPTY DRUMS PROMPTLY

When imports of salt cake were cut off by the war in 1939, disaster loomed for the southern kraft paper industry. But Mathieson Research, in anticipation of this crisis, had mated determination with ingenuity to score a bulls-eye — *the creation of Mathieson Synthetic Salt Cake!*

Before the shortage of the natural product materialized, production of synthetic salt cake was in full swing and shipments speeding to the kraft mills. This prevented severe dislocations in manufacture and enabled the industry to proceed at capacity production.

With such discoveries that dovetail into industry's quest for swifter, more efficient production and decreased processing costs, Mathieson Research hits the bulls-eye often.

**Mathieson**
CHEMICALS

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CAUSTIC SODA . . . SODA ASH . . . BICARBONATE OF SODA . . . LIQUID CHLORINE . . . BLEACHING POWDER . . . AMMONIA, ANHYDROUS & AQUA . . . HTH PRODUCTS . . . FUSED ALKALI PRODUCTS . . . SYNTHETIC SALT CAKE . . . DRY ICE . . . CARBONIC GAS . . . SODIUM CHLORITE PRODUCTS . . . SODIUM METHYLATE

# THE PAPER INDUSTRY and PAPER WORLD

*1919 -- 25th Anniversary -- 1944*

*Published monthly by*

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**VOLUME 25 — MARCH, 1944 — NUMBER 12**

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# Invasions that CLICK are planned first ON PAPER!

★ Everywhere Allied operations by sea, land and air are pushing toward objectives on roads to Berlin and Tokyo with paper speeding the attack "as per plan."

Attack plans, mapped out completely *on paper first*, tell every officer, every non-com what to do and when, timing his action and that of his men into the larger pattern of the successful assault.

Hammermill is proud to be supplying a steady flow of paper to our Army and Navy for these front-line operations; to be producing and delivering to government and private industry the "paper weapons" being used to get the job done faster and better.

HAMMERMILL PAPER COMPANY

ERIE, PENNSYLVANIA

# *The* DEFIBRATOR-CHEMIPULPER

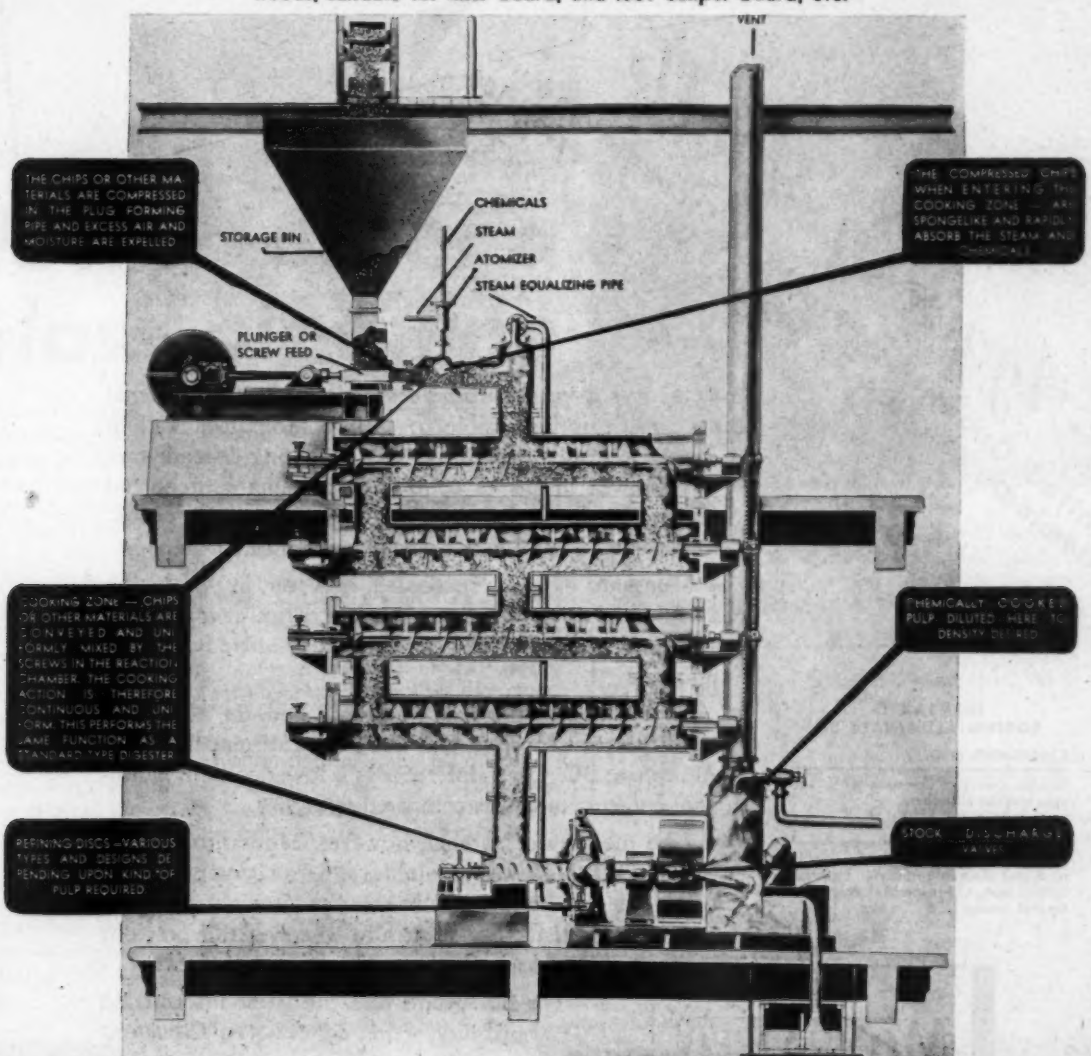
*combining the* ASPLUND DEFIBRATOR

*and* B-K REACTION CHAMBER

(PATENTED AND PATENTS PENDING)

# THE MODERN PULP MAKER

**Units now in continuous operation producing semi-chemical pulps, from miscellaneous woods, suitable for liner board, and .009 caliper board, etc.**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THE CHIPS OR OTHER MATERIALS ARE COMPRESSED IN THE PLUG FORMING PIPE AND EXCESS AIR AND MOISTURE ARE EXPELLED
STORAGE BIN
CHEMICALS
STEAM
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STEAM EQUALIZING PIPE
PLUNGER OR SCREW FEED
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CHEMICALLY COOKED PULP DILUTED HERE TO DENSITY DESIRED
REFINING DISCS—VARIOUS TYPES AND DESIGNS DEPENDING UPON KIND OF PULP REQUIRED
STOCK DISCHARGE VALVE

**We are now soliciting orders and making arrangements for post-war delivery of our products among which are included the DEFIBRATOR-CHEMIPULPER . . . the ROLL-O-FINER for continuous, High Density Beating with Positive Fibre Treatment . . . and the BRAMMER CONTROL for Accurate Regulation of Consistency and Recording both before and after diluting water has been supplied. . . . Catalogs upon request.**

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**122 East 42nd Street, New York, N. Y.**

# SODIUM ALUMINATE

*Again Available*

**Limited Quantities of a High Strength Sodium Aluminate Can Now Be Supplied Without Priorities**

FOR over a year wartime restrictions on raw material have made it impossible to supply Monsanto Sodium Aluminate to the paper mills who have long depended on this efficient means of controlling alumina content and acidity to help produce improved sizing . . . more permanent paper . . . and better machine conditions.

Monsanto has now succeeded, however, in developing a sodium aluminate from a new, less critical raw material, and limited quantities can now be offered without priorities.

To distinguish the new Monsanto Sodium Aluminate from the prewar product, it has been christened Sodium Aluminate BC. Chief difference is a lower sodium aluminate content — 81% as compared with 90%.

Like the prewar material, however, Monsanto Sodium Aluminate BC is low in insolubles and iron content, readily soluble in water and stable in solution. It is an eminently satisfactory substitute wherever the previous Monsanto Sodium Aluminate was used.

For full details and the latest information on availability, write: MONSANTO CHEMICAL COMPANY, Merrimac Division, Everett Station, Boston 49, Massachusetts.

**MONSANTO SODIUM ALUMINATE BC**

**STANDARD FORM:**

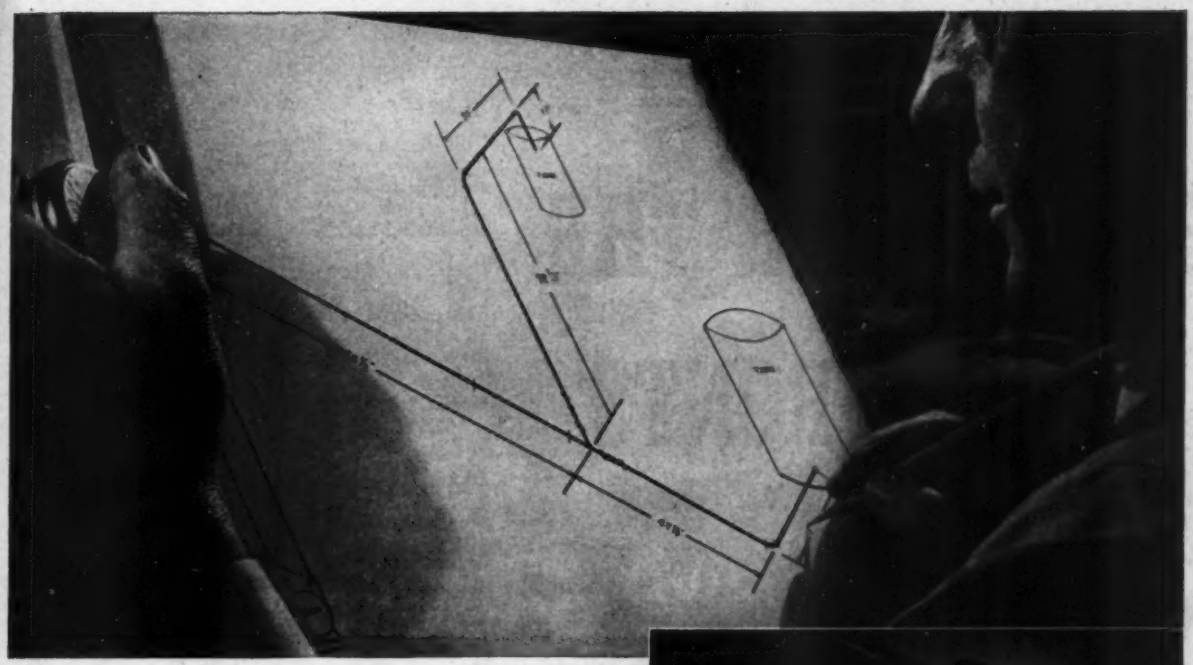
Soluble powder; Contains 81% soluble sodium aluminate.

**PROPERTIES:**

Readily soluble in water and low in iron and insoluble material (approx. 0.06% iron, 1% insoluble). Stable for several weeks in 6% water solution.

**MONSANTO CHEMICALS**

SERVING INDUSTRY...WHICH SERVES MANKIND



# How to order a Glass pipe line

When you order a PYREX brand Glass Piping installation, you get a custom made job. Conical flanged glass piping is prefabricated in the proper length for your particular line. That means when you come to install PYREX Piping you don't have to allow any extra time for cutting to proper length, threading and fitting on the job as you do with other materials.

The few extra minutes it takes to make a sketch of your proposed line is more than compensated for by the saving in time you effect on installing. A simple layout like the one shown in the illustration is all that is necessary to insure our filling your order with the correct parts to make installation simply a matter of making the connections. Be sure to indicate on your sketch center to face and center to center distances.

Where variations in the dimensions are permissible it is well to indicate them, because the system may then be simplified by using a number of identical lengths. This also cuts down on the spare parts requirements. Besides showing lengths of pipe, include in your sketch pipe sizes and also a brief description and dimensions of the metal parts to be connected into the line.

Attention to the above details will enable us to handle your orders more efficiently and save time in getting your PYREX Piping to you. Bulletin 839, "How to Install PYREX Piping," sent you on request, gives additional practical suggestions on installation and also lists fittings, adaptor connections, etc. available for PYREX Piping. And should there be any questions in your mind, don't hesitate to call on Corning engineers. They'll be glad to give you the answers.

For complete details, use this coupon.

Corning Glass Works, Industrial Division, Dept. P14
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Gentlemen:

I would like glass piping information immediately on the subject I have checked below. I understand there is no obligation.

- ☐ Valves
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- ☐ Installation Manual (Bulletin 839)
- ☐ Adaptors

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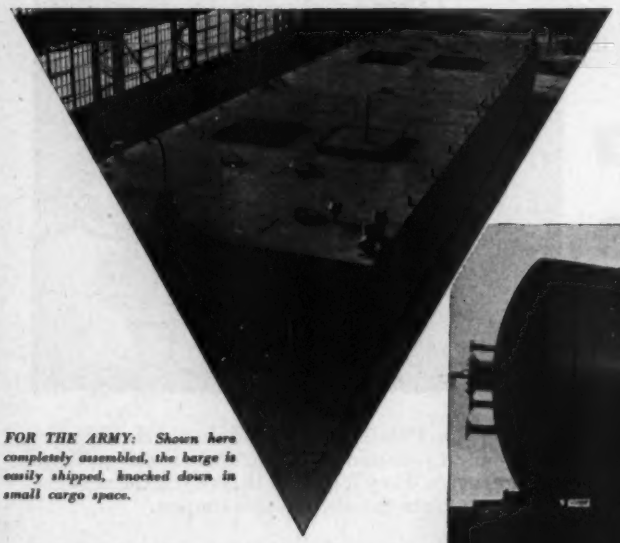
**Pyrex Industrial Glass**

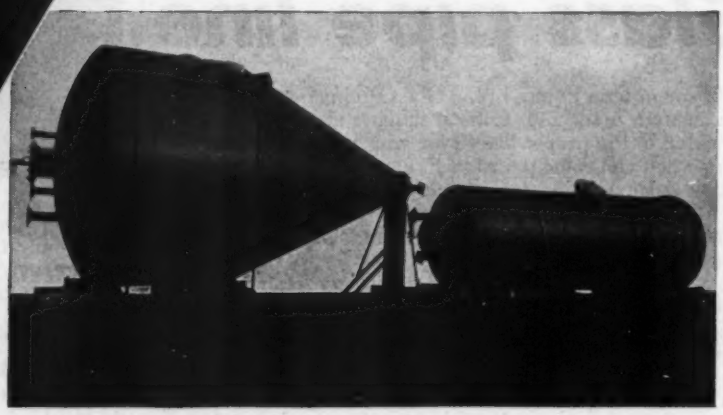
# "MAIL-ORDER" BARGES FOR THE BATTLEFRONTS

This huge steel barge is transported in sections to a battle area, where it can be assembled and set afloat quickly and easily. Pre-fabricated in the GATX plant at Sharon, it is another example of our widely diverse, often unprecedented, production accomplishments during this war.

Along with this and many other types of war equipment, we are building the GATX know-how—the broadened experience, the improved methods that will mean postwar economies for you.



*FOR THE ARMY: Shown here completely assembled, the barge is easily shipped, knocked down in small cargo space.*



*FOR INDUSTRY: General American makes pressure vessels of all types, for use in production transportation and storage.*

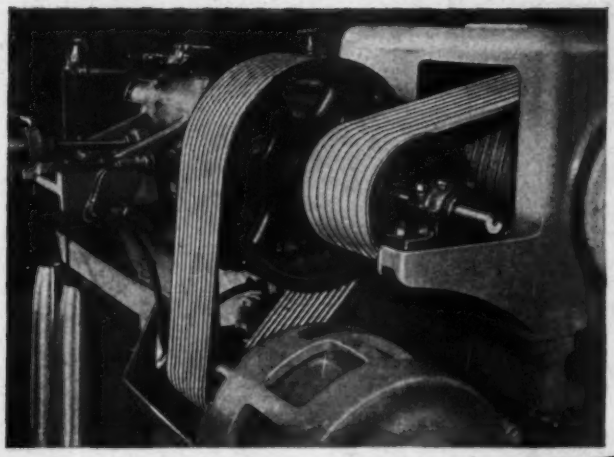
*Building for today's fighters—Planning for tomorrow's builders*

## GENERAL AMERICAN TRANSPORTATION CORPORATION

GATX GENERAL AMERICAN PLATE & WELDING DIVISION PLANT AT SHARON, PA

Plate & Welding Division — Sharon, Pennsylvania

"Specialists in plate fabrication—manufacturers of pressure vessels of steel, alloys and aluminum—all classes of welding—process equipment of all types—chemical engineering laboratories and service—completely equipped field erection department."



## *Used in Many Industries

On this machine which profiles the outside of high-explosive shells, Gates V-Belts of special synthetic rubber are used because of their proved ability to withstand bad oil conditions. By actual records, on hundreds of installations where oil or heat conditions are severe, Gates special synthetic V-Belts are wearing 2 times to 3 times as long as any natural rubber belts ever used!

Widely Used* for Over 6 Years

# GATES Synthetic Rubber V-Belts

## —Have Proved *Superior*

## Even to Belts of *Natural* Rubber!

Gates began making V-Belts entirely of synthetic rubber more than 6 years ago. Each year since then, thousands upon thousands of Gates synthetic rubber V-Belts have been making outstanding service records in aircraft factories, in steel mills, in ordnance plants, in machine parts factories—in fact, in practically every type of industrial plant in the nation.

This long *head-start* in the fabrication of synthetic rubber V-Belts was no accident. It was started deliberately, in peacetime and not under pressure of necessity. The synthetic rubber selected by Gates is a very *special* synthetic rubber—not in any sense merely a "substitute" for rubber. In certain very important applications it is *greatly superior* to natural rubber.

For example:—one special synthetic rubber selected by Gates has the unusual characteristic of withstanding oil and heat much better than even natural rubber. Where heat and oil conditions are especially severe, Gates special synthetic V-Belts are outwearing any natural rubber V-Belts by as much as 230%.

Of the very greatest importance to V-Belt users today is Gates' unusually long experience and success in making V-Belts of synthetic rubber. This is especially important now because the time has come when Gates' superior knowledge of synthetic rubber can be put to work for you right in your own plant.

**You have only to look in your telephone directory and call the Gates Field Engineer. He will put at your service the full benefits of Gates' knowledge and experience without the slightest obligation.**

441

## THE GATES RUBBER COMPANY

*Engineering Offices and Stocks in All Large Industrial Centers*

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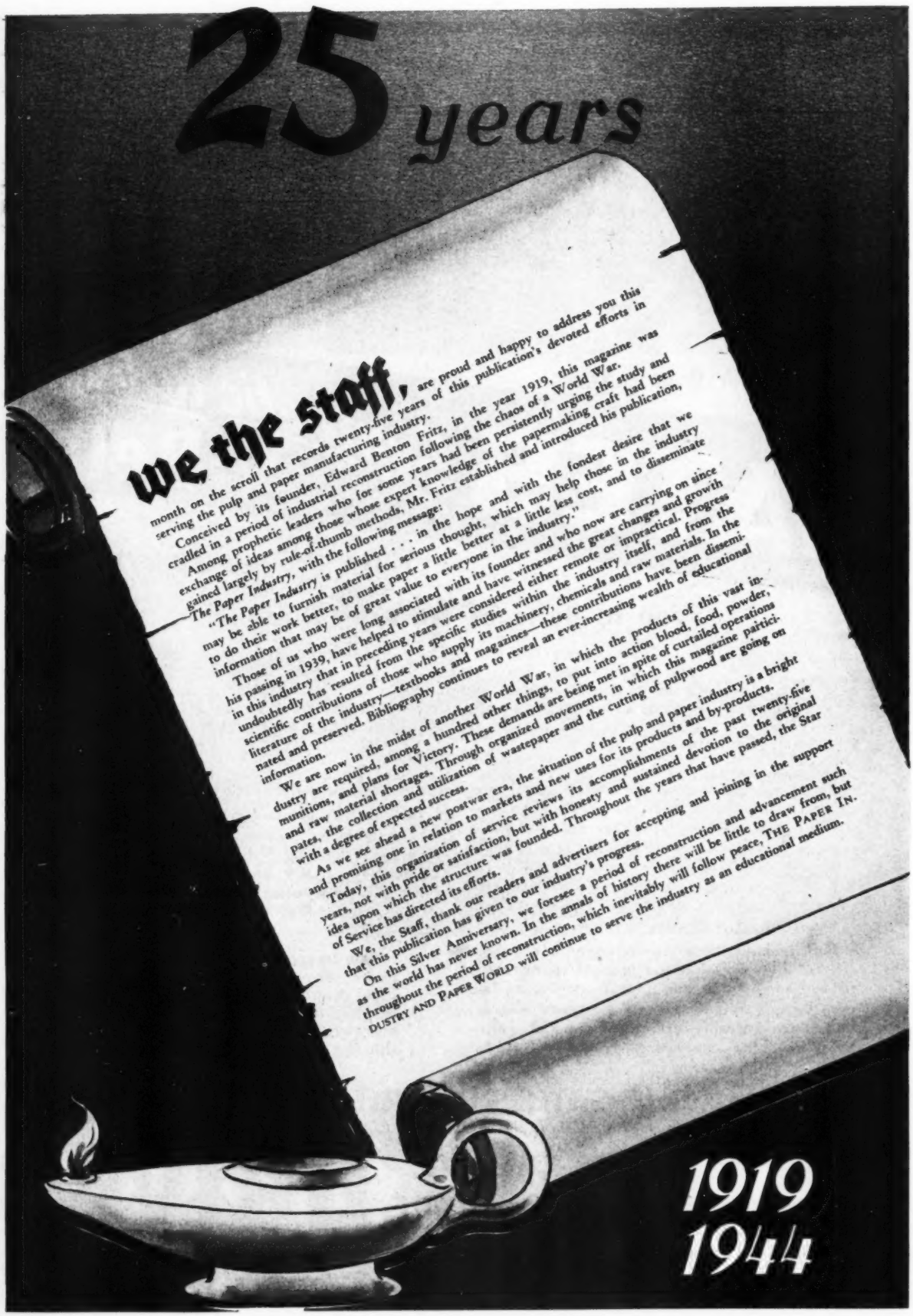
25 years
We the staff,
month on the scroll that records twenty-five years of this publication's devoted efforts in serving the pulp and paper manufacturing industry.
Conceived by its founder, Edward Benton Fritz, in the year 1919, this magazine was cradled in a period of industrial reconstruction following the chaos of a World War.
Among prophetic leaders who for some years had been persistently urging the study and exchange of ideas among those whose expert knowledge of the papermaking craft had been gained largely by rule-of-thumb methods, Mr. Fritz established and introduced his publication, *The Paper Industry*, with the following message:
"*The Paper Industry* is published . . . in the hope and with the fondest desire that we may be able to furnish material for serious thought, which may help those in the industry to do their work better, to make paper a little better at a little less cost, and to disseminate information that may be of great value to everyone in the industry."
Those of us who were long associated with its founder and who now are carrying on since his passing in 1939, have helped to stimulate and have witnessed the great changes and growth in this industry that in preceding years were considered either remote or impractical. Progress undoubtedly has resulted from the specific studies within the industry itself, and from the scientific contributions of those who supply its machinery, chemicals and raw materials. In the literature of the industry—textbooks and magazines—these contributions have been disseminated and preserved. Bibliography continues to reveal an ever-increasing wealth of educational information.
We are now in the midst of another World War, in which the products of this vast industry are required, among a hundred other things, to put into action blood, food, powder, munitions, and plans for Victory. These demands are being met in spite of curtailed operations and raw material shortages. Through organized movements, in which this magazine participates, the collection and utilization of wastepaper and the cutting of pulpwood are going on with a degree of expected success.
As we see ahead a new postwar era, the situation of the pulp and paper industry is a bright and promising one in relation to markets and new uses for its products and by-products.
Today, this organization of service reviews its accomplishments of the past twenty-five years, not with pride or satisfaction, but with honesty and sustained devotion to the original idea upon which the structure was founded. Throughout the years that have passed, the Star of Service has directed its efforts.
We, the Staff, thank our readers and advertisers for accepting and joining in the support that this publication has given to our industry's progress.
On this Silver Anniversary, we foresee a period of reconstruction and advancement such as the world has never known. In the annals of history there will be little to draw from, but throughout the period of reconstruction, which inevitably will follow peace, THE PAPER INDUSTRY AND PAPER WORLD will continue to serve the industry as an educational medium.
1919
1944

# TRADE WINDS

★ ★ ★

## January Pulpwood Receipts Up—Inventories Down

▶▶▶ THE WAR ACTIVITIES COMMITTEE of the Pulpwood Consuming Industries announces that January mill receipts of domestic pulpwood showed some improvement despite bad weather and consequent slow-downs in deliveries in the South.

Total receipts of domestic pulpwood for the first month of 1944 were 1,216,128 cords. This figure was higher than the 1,186,000 cords taken in by the mills in December and higher than receipts in January, a year ago, and in 1941. It was slightly under receipts in January, 1942.

Depleted inventories, however, in the face of wartime demands continued to make the pulpwood production problem critical, the War Activities Committee states. Unless mills are able to build up larger inventories during good seasonal production months, they will be caught short and may be forced to close when receipts taper off because of seasonal factors. The War Production Board has set a goal of 14,000,000 cords of domestic pulpwood for 1944.

A substantial improvement in mill receipts was reported for January by mills in the Lake States, largely because of extremely favorable logging weather. The Appalachian region and the Pacific Northwest were above January, 1943, but below December deliveries. The Northeast, though above November and December, continued to lag far behind its previous records. The South, battered by sleet storms and heavy rains, slumped almost 100,000 cords below its December receipts.

The record for January by regions is shown in the accompanying table.

Imports of pulpwood from Canada totalled 123,099 cords and brought the overall total of mill receipts for January to 1,339,227. Imports by regions were: Northeast, 84,510; Lake States, 31,826; Pacific Northwest, 6,763. No imports were reported for the South and Appalacian region.

### Freedom Pays Dividends, Too!

A Newton County, Georgia, farmer, a news story reports, "did a lot for the Nation's war effort by cutting and shipping 41 carloads of pulpwood from his farmlands. Equally important, from a purely personal standpoint, is the fact that the farmer's efforts netted him $4,510 . . . a tidy sum from land that otherwise wouldn't yield anything."

One thing to be drawn from this story is obvious: Pulpwood cutting pays dividends—in more ways than one. Many farmers have been able to increase farm earnings substantially by cutting pulpwood. At the same time they have been able to improve their woodlands.

But there is something else to be gained from this story.

The Nation desperately needs pulpwood for a hundred and more vital war uses. Without pulpwood our war machine, now shifting into high gear, would falter; our victory pace would be slowed down and probably halted.

Uncle Sam relies on the patriotism of his farmers to cut the 14,000,000 cords needed in '44, but offers peak prices in the bargain.

This could happen only in America. Only in the Land of the Free could a farmer make profits while aiding the war effort. Germany, like the United States, is making extensive use of its farm timber; but Germany, you can rest assured, isn't offering high prices to its farmers. Nor do the Nazis appeal to patriotism. The concentration camp—or worse—awaits the farmer who fails to produce the limit. That is the difference between this country and Naziland.

That's the dividend which counts in the long run.

◆

| Region | January (1944) | December | January (1943) |
|---|---|---|---|
| Appalachian | 104,032 | 137,000 | 79,000 |
| Northeast | 158,089 | 105,000 | 162,000 |
| Lake States | 293,190 | 175,000 | 145,000 |
| South | 477,980 | 571,000 | 473,000 |
| Pacific Northwest | 182,837 | 198,000 | 140,000 |
| Total U. S. | 1,216,128 | 1,186,000 | 999,000 |

## WASTEPAPER DRIVE GAINS MOMENTUM THROUGHOUT NATION

Late news from the U. S. Victory Waste Paper Campaign states that a national Gallup poll shows only 75 per cent of the people know about the Waste Paper Campaign and only 50 per cent are regularly saving waste paper. The War Production Board has reported the actual receipts of wastepaper for January were 541,000 tons; the estimated receipts for that month were 570,000 tons. The Newspaper Committee of the U. S. Victory Waste Paper Campaign states the goal is 667,000 tons every month.

Throughout the nation, industries, business houses, schools, public institutions, newspapers, schools, Boy Scouts, and a large percentage of individuals are enlisted to save paper. Frills are being eliminated, wrappings dispensed with, and it is even being advocated that the use of V-mail not only speeds letters to the front and conserves shipping space, but contributes to the drive to save paper. Many paper-saving practices are being adopted by business houses.

A large hospital in Chicago conceived the idea of putting its records on microfilm. The original records totaling three tons of paper were sent to the salvage drive.

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## MORATORIUM ON LIGHT NEWSPRINT FROM CANADA

Newsprint lighter than standard 32 pound, which Canadian mills have been making in recent years, may not be manufactured or sold for delivery to North American consumers between now and April 30 next, according to an order issued by the Canadian Wartime Prices and Trade Board on February 28.

The temporary prohibition was ordered by Guy E. Hoult, newsprint administrator, who stated that numerous technical problems were involved in any shift in production from 32-pound to 30-pound paper. These difficulties might lead to Canada's inability to discharge her commitment to supply 200,000 tons of newsprint per month to the United States during the first six months of 1944, and to fulfill other production requirements of Canadian overseas markets. The order has been approved by United States authorities, Mr. Hoult stated.

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## KALAMAZOO MILLS PARTICIPATING IN COLLECTION OF PAPER

Although Kalamazoo River Valley newspapers are not affiliated with the nation-wide wastepaper collection campaign, a most active and efficient organization has been established locally, headed by Gordon J. Dilno, advertising manager of the Sutherland Paper Company. All mills in the Valley participate and all benefit from the campaign.

Initial advertising expenses were defrayed by the organization, and daily and weekly newspapers were used to arouse and maintain the interest of the general public. This was followed by regular collections of wastepaper, gathered and bundled according to instructions already issued.

Monthly collections now are staged in every community. Paper mills furnish trucks, and the services of the Salvation Army, Boy Scout organizations, youth canteen groups and school pupils have been utilized. Arrangements regarding prices have been made with wastepaper dealers, and the proceeds go to the various groups furnishing truck drivers, according to a formula agreed upon by the committee.

Although the advertising allotment has run out, the entire project has taken on a patriotic community aspect, under the direction of Mr. Dilno; and in view of the fact that the mills are increasingly dependent on waste to maintain even their curtailed current production schedules, the newspapers have been more than generous in their contributions of space and reporter-time in keeping this matter before the attention of the public.

That gratifying results have been obtained is evidenced by the following figures. Average monthly collections in the city of Kalamazoo during September, October and November, amounted to 490 tons. In December, 413 tons were collected. The nearby communities of Otsego, Schoolcraft, Paw Paw and Vicksburg contributed 73 tons between October and January.

◆

## TRUCKS NEEDED TO HARVEST PULPWOOD

Another serious problem looms, which may retard the harvesting of pulpwood. This is the inability of the industry to obtain enough trucks to replace outworn equipment, the War Activities Committee of the Pulpwood Consuming Industries recently announced. Many cords of pulpwood already cut are lying in the woodlands through lack of transportation facilities. This situation is especially critical in the South, where pulpwood rots when not promptly moved to the mills.

Exclusive of the Pacific Northwest, the industry at present operates about 12,000 small trucks, chiefly of the 1½ ton variety. Of this number, approximately 6,300 must be replaced in 1944 if operations are to continue. And of these replacements, 4,100 are necessary during the first quarter of this year.

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▶▶▶ CANADIAN MILLS ARE OPPOSED to the proposal to substitute 30 pound paper for 32 pound; this despite action by Congress in lowering the minimum basis weight for duty-free admission of newsprint. The Canadian Newsprint Administrator has forbidden the exportation of paper in the lighter weight, although many American newspapers had placed contracts with Canadian mills for the delivery of such paper as soon as the American Congress took permissive action. The Canadian mills believe the proposal to be uneconomical, being of the opinion that it will not serve to increase the available yardage of paper desired by American publishers.

◆

## WAR PRISONERS PUT TO WORK IN MICHIGAN WOODS

Several hundred German prisoners of war recently arrived in Michigan's Upper Peninsula, where they will be put to work in the harvesting of chemical and pulpwood, according to an announcement by Colonel William H. McCarthy, commander of the Wisconsin and Upper Michigan District of the sixth service command.

The prisoners, who were brought to the Michigan north woods to help in

### SCRAP TAKES THE AIR!

Here's a use for scrap that's out of this world—literally!

"This is Station S-C-R-A-P!" That announcement broadcast recently heralded the official opening of the American Red Cross' latest venture into soldier entertainment, radio station SCRAP, located Somewhere in North Africa.

The station's transmitter was constructed entirely from scrap from Nazi planes. Station SCRAP has a broadcast range of more than 200 miles and boasts a soldier audience of (*Censored*) Allied Soldiers.

**YOUR SCRAP: Where it goes**

| Item | Steel Used | Scrap that can be used |
|---|---|---|
| 3-inch anti-aircraft gun | 12,000 pounds | 6,000 pounds |
| 37 mm. anti-aircraft gun | 5,000 " | 2,500 " |
| .30 caliber machine gun | 25 " | 12.5 " |
| .50 caliber machine gun | 100 " | 50 " |
| Medium tank—27 tons | 72,000 " | 36,000 " |
| Light tank—15 tons | 32,000 " | 16,000 " |
| Hull—heavy cruiser | 13,270,000 " | 6,635,000 " |
| 35,000 ton battleship | 36,000,000 " | 18,000,000 " |
| 100-pound aerial bomb | 50 " | 25 " |
| 500-pound aerial bomb | 250 " | 125 " |
| 2,000-pound aerial bomb | 1,000 " | 500 " |

**SCRAP IS A MUST! — DON'T LET IT RUST!**

PAPER · · · America's 6th Industry

# ANOTHER NEW USE FOR PAPER

(NEWS ITEM: *Paperboard garbage containers are being manufactured to replace those made of critical materials.*)

A heavy-duty paperboard garbage container has been developed in answer to a search for containers to replace those made from critical materials. Made of special asphalt-treated paperboard, these containers are completely finished by the manufacturer and shipped in ready-to-use form.

Many unique war uses have been found for paper. When the Victory is won, paper garbage containers will no doubt continue to be used. Housewives will have grown accustomed to their added economy and sanitation.

Many practical and technical advancements have been developed out of our war work activities. These are being correlated and utilized by our Research and Development Committee and will result in a number of improvements and more efficient equipment in our Post-War Paper-Making Machinery.

The Puseyjones Flow-Spreader improves the delivery of stock to the fourdrinier or cylinder wet end. Formation is improved and production is increased.

Puseyjones men and production facilities are on war work. However, since the WPB has declared the Paper Industry essential, we are in a better position to supply vital repair and replacement parts to keep present equipment operating efficiently.

Puseyjones engineers will welcome the opportunity to aid you with your post war problems. We have prepared three informative articles which are yours for the asking—"The Post-War Fourdrinier," "Development of Stream-Flow Vat System," "The Flow Spreader." Ask for reprints by name.

**THE PUSEY AND JONES CORPORATION**
**Established 1848. Builders of Paper-Making Machinery**
**Wilmington, Delaware, U. S. A.**

THE SIGN OF TRADE MARK SUPERIOR QUALITY

alleviating the acute labor shortage, will be fairly evenly divided between Camp Sidnaw (close to Sidnaw) and Camp Evelyn (near Wetmore), both former CCC camps. The buildings have been converted to provide adequate living quarters and are in charge of Lieutenant Colonel Roy G. Messmer, former commander of the 763rd military police battalion.

Private industry contracted with the government for the prisoner labor, paying the government the prevailing wage scale. The government will follow the established procedure of feeding, clothing and housing the prisoners, paying them in addition, 80 cents per day.

♦

## MEXICO BUYS EQUIPMENT FROM ALGONQUIN PLANT

Announcement has just been made through an attorney for the Mexican Government that it has purchased the Algonquin Paper Corporation plant at Ogdensburg, New York.

This plant, one of the large mills in Northern New York, has operated constantly for twenty years until it was closed in March, 1943. At that time, the paper mill closed temporarily, due to wartime conditions, but the sulphite mill continued to operate (Cf. P. I. & P. W., March, 1944). The plant has a capacity of 135 tons of newsprint per day, and is the backbone of Ogdensburg industry. Employees thrown out of work when the paper mill was closed had expected it to reopen when times became normal.

The attorney negotiating the transaction, stated that the mill and its machinery will be transported immediately to Mexico following completion of the sale, and it is planned to erect a mill near Mexico City. The equipment to be transported to Mexico includes the paper machine, four digesters, nine pulpwood grinders, two beaters, two jordans, one wet machine and one Kamyr press.

♦

## SANGAMON PAPER MILL DESTROYED BY FIRE

Fire destroyed the Sangamon Paper Mill at Kaukauna, Wisconsin, February 29, with a loss estimated at over $300,000. Only the four stone walls and a heap of twisted machinery remained at noon, eight hours after the fire was discovered by three men who were operating one of the two paper machines in the building.

The flames were discovered coming through the first floor of the two story building. The structure was 60 feet wide by 260 feet long. T. J. Russell, mill superintendent, said that little of the equipment could be salvaged. The firm made bogus kraft and corrugated paper for packing purposes, converting it from waste material. A large amount of used paper in a storehouse nearby was saved, as were large stock piles of pulpwood owned by the Thilmany Pulp and Paper Company near by.

The mill, the former Outagamie Paper Mill and later the Patten Paper Company, was reopened in 1941 by Abe and Joseph Cohen of Chicago. Sam J. Cohen, the general manager, stated that much of the equipment destroyed was new, and that he did not know as yet what the plans for rebuilding would be.

Included in the loss were two paper machines, six Jordans, four beaters, twelve motors, 75 tons of old paper, one paper cutter, and one paper trimmer. About 25,000 pounds of finished rolls on the second floor also were destroyed.

**Labor Shortage Relieved by Service Men**

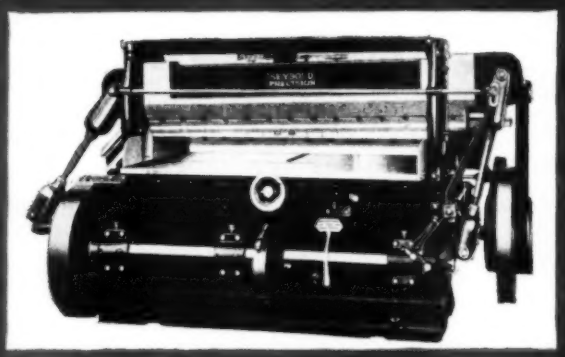
*Soldiers in regular Army fatigue uniforms at work on the shipping platform of the Linden Division of the American Writing Paper Corporation, Holyoke, Mass. The AWP and the Crocker McElwain Company have employed service men from nearby Westover Field Army airbase (Cf. P. I. & P. W., Feb. 1944). Shown here are: Pvt. Frank Tarento, Richmond, Calif.; Corp. George N. Samples, Pasadena, Calif.; Pvt. James B. Crowley, Pittsburgh, Pa.; and Pvt. Joseph Saucier, of Mississippi.*

## CANADIAN ENGINEERS STUDY USE OF LIGNIN EXTRACT FOR ROADS

Supplying a possible solution to many road problems, experiments in the use of lignin extract now being carried on by the Road Department of the Province of Quebec, are watched with keen interest by Canadian road engineers.

Used in powder form, the lignin extract (a product of Consolidated Paper Corporation and known to the industry as *copacite*) is blended with gravel and clay to form a road which has one-third the strength of concrete. Experiments have proved that it is possible to economize on the amount of gravel used, and also, that large savings can be effected in the use of asphalt covering. Stabilization of the base courses is accomplished by spreading a mixture of gravel, clay and *copacite* in layers not exceeding three inches, and consolidating with multiple-tire rollers.

# A Good Wartime Policy



## for keeping your SEYBOLD in good working condition

***FOR YEARS OF SERVICE*** merely follow the simple, easy procedure outlined below. This policy will pay you big dividends and is wonderful *insurance.* Should you need repairs or service, our nearest office will gladly serve you.

## *TAKE 3 SIMPLE PRECAUTIONS—*

**LUBRICATE** drive shaft bearings, clutch and moving parts. Inspect cutting knife.

**CHECK** clutch and brake adjustment.

**INSPECT** the clamp pressure mechanism.

**SEYBOLD SALES AND SERVICE**

New York: E. P. Lawton & Co., Inc., 426 West 33rd St.

Chicago: Chas. N. Stevens Co., Inc., 112 West Harrison St.

Dayton, Ohio: Harris-Seybold-Potter Co., 823 Washington St.

Southern Sales District: Harris-Seybold-Potter Co., 220 Luckie St., N.W., Atlanta, Ga.

West Coast Distributors: Harry W. Brintnall Co., San Francisco, Los Angeles, Seattle.

Canadian Distributors: Harris-Seybold-Potter (Canada) Ltd., Toronto and Montreal.

# SEYBOLD

• DIVISION •

**HARRIS-SEYBOLD-POTTER COMPANY**

823 WASHINGTON ST., DAYTON 7, OHIO

# Washington News

## BOESCHENSTEIN REPORTS ON PULP ALLOCATION

The policy of the WPB in allocating available pulp to mills during the first quarter of 1944 was outlined February 9 by Harold Boeschenstein, acting director of the Forest Products Bureau of the WPB.

Mr. Boeschenstein stated that the work of the Pulp Allocation Office in carrying out the program determination of the WPB Requirements Committee, with the aid of the Wood Pulp Allocation Industry Advisory Committee, has been completed for the first quarter of 1944, and specific allocations to all mills have been made with the understanding that, with the pulp so allotted, each mill is expected to produce the maximum paper or paperboard possible, by the use of as much wastepaper and other materials as practicable in making specified paper products.

It was further explained by Mr. Boeschenstein that after the Requirements Committee had determined how the total supply of wood pulp for the first quarter of 1944 was to be divided among some 17 segments of the paper and paperboard industry, WPB was faced with the necessity of establishing standards for making specific allotments of pulp to each of the mills. These standards were worked out with the assistance of the Wood Pulp Allocation Industry Advisory Committee prior to the beginning of this year.

## THE NEW TAX BILL

When Congress passed the tax bill over the President's veto, it enacted into law as part of that bill two important amendments of particular importance to the paper industry.

One amendment, known as the Vandenberg amendment, will permit the duty free importation of newsprint from Canada in basis weight of 30 pounds, less a 5 per cent manufacturing tolerance, and the admission of rolls 15 inches in width, instead of the 16-inch minimum heretofore prescribed. The 30-pound provision constitutes a tolerance of 5 per cent below present limits, but this is effective only so long as regulations limit the use of paper by newspapers.

The other amendment involves the tax computation on timber cut for lumber and plywood. Under the existing law, taxpayers who cut pulpwood must pay taxes at the ordinary income and excess profits tax rate, instead of at the lower rate applying to capital gain. The maximum tax under the new provision is 25 per cent, while under the old provision the rate might be as high as 90 per cent.

The tax provision is effective April 1, but the change in the tariff rate on newsprint is effective as of the date of the passage of the bill over the veto, February 25.

## NEW CEILING PRICES ON 4 GRADES WOOD PULP

An increase in producers' ceilings on four major wood pulp grades has been announced by the OPA as an emergency measure to assist in maintaining the production of vitally needed supplies of wood pulp. Screenings of the same grades and side-runs directly related to them also are given higher ceilings. Groundwood pulp, soda pulp, bleached sulphite and unbleached sulphite are the grades affected, with increases ranging from $2 to $10 a ton.

The need for this immediate increase stems from the fact that current costs have risen to a point which precludes the sale of these grades under the established ceilings without serious losses. A price adjustment is necessary at this time in order to insure necessary seasonal deliveries of pulpwood. Since the establishment of OPA ceilings in 1942, costs have risen steadily, and in the sulphite, groundwood and soda grades (whose ceilings are currently advanced) costs have actually exceeded the ceiling prices in certain important producing areas, OPA said.

As a result of today's increases, which amount to 11.7 per cent over existing ceilings, producers will receive an additional annual amount of approximately $12,500,000. The wood pulps given ceiling increases today represent 55 per cent of total wood pulp tonnage sold on the market. The increases are equivalent to a general raise of 6.4 per cent in the ceilings of all marketed wood pulp. While today's increases apply only to grades and producers where the needs are urgent, those ceilings remaining unchanged will be re-examined to determine their adequacy for the maintenance of production.

In deciding on the amounts of the increases, OPA took into consideration subsidy payments to wood pulp producers made since July, 1943, as an aid in maintaining production. The increases are predicated on the continuanc of these subsidies, with possible modification of the 1943 program.

The American Paper and Pulp Association has published the accompanying table of new pulp prices.

## REPORT ON COMBINED 1944 REQUIREMENTS

The final report of the Combined Pulp and Paper Committee was submitted to the Combined Production and Resources Board and the Combined Raw Materials Board on February 20. This committee was created on August 25, 1943, to study the pulp and paper situation in the United States, Canada, and Great Britain.

The current report represents a summation of the facts covering pulpwood, pulp and paper products, and presents estimated combined requirements and supply as projected for 1944. A preliminary report was is-

**New Pulp Prices—February 14, 1944 (MPR 114 AMD'T 9)**

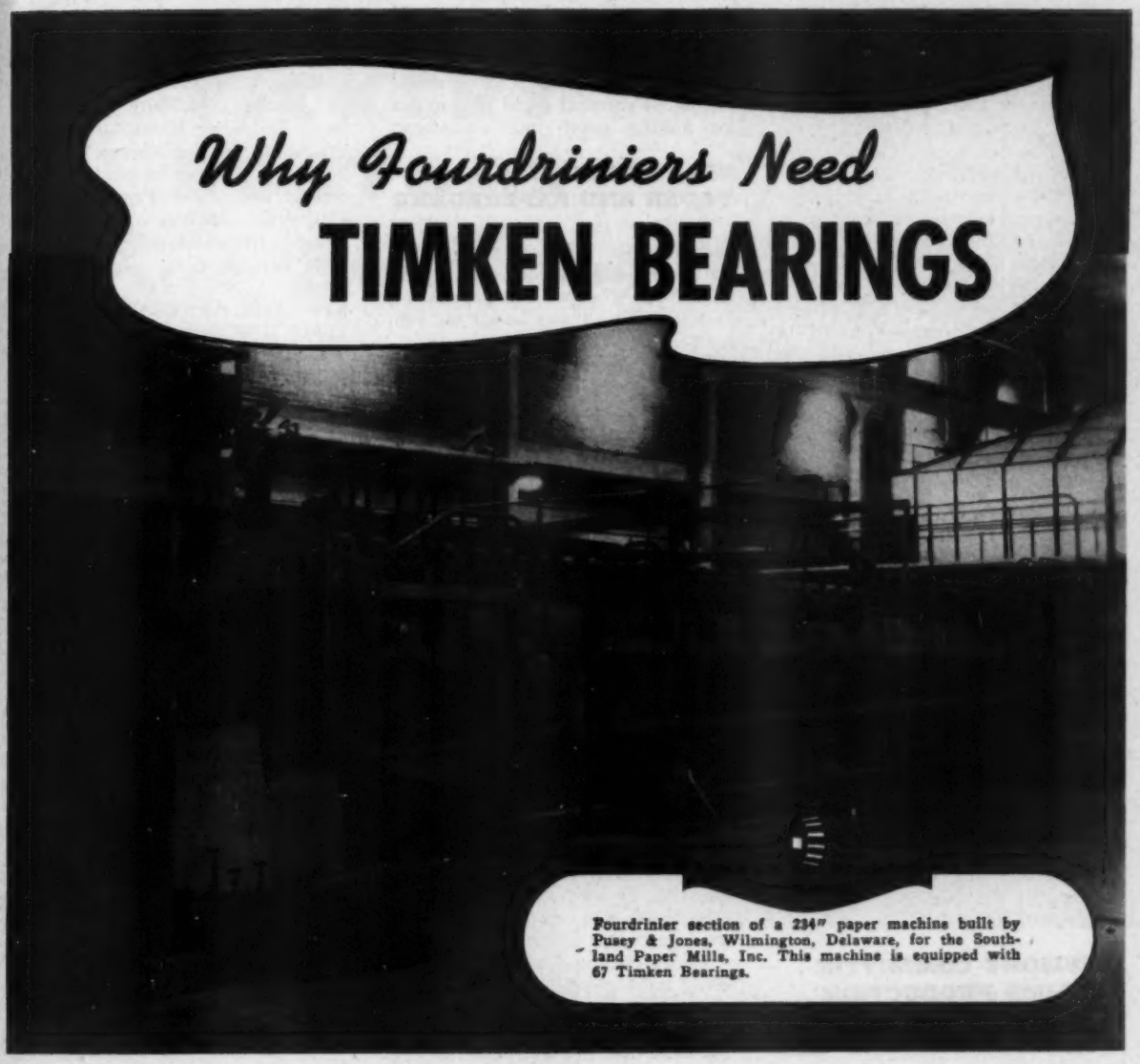
| | *Old* | *New* | *Increase* |
|---|---|---|---|
| Bl. Softwood—Sulphite | 76.00 | 86.00 | 10.00 |
| Unbl. Softwood—Sulphite | 66.00 | 74.00 | 8.00 |
| Bl. Hardwood—Sulphite | 73.50 | 83.50 | 10.00 |
| Unbl. Hardwood—Sulphite | 63.50 | 71.50 | 8.00 |
| Bl. Soda | 66.00 | 72.00 | 6.00 |
| Unbl. Soda | 62.00 | 68.00 | 6.00 |
| Groundwood | 46.00 | 50.00 | 4.00 |
| on Paper Machines | ..... | 53.00 | ..... |
| Sulphite Screenings | 38.50 | 43.50 | 5.00 |
| Groundwood Screenings | 30.00 | 32.00 | 2.00 |
| Side Run News | 46.00 | 50.00 | 4.00 |

**Unchanged Prices**

| | | | |
|---|---|---|---|
| Northern Bl. Sulphate | 86.00 | So. Semi-Bl. Sulphate | 75.00 |
| So. Bl. Sulphate | 79.00 | No. Unbl. Sulphate | 73.00 |
| No. Semi-Bl. Sulphate | 82.00 | So. Unbl. Sulphate | 63.50 |

Prices per short air dry ton delivered to consumers east of the Continental Divide exclusive of Denver, Colo. (West of the Continental Divide and in Denver ceilings are $6.00 per ton lower.)

# *Why Fourdriniers Need*
# TIMKEN BEARINGS



Fourdrinier section of a 234" paper machine built by Pusey & Jones, Wilmington, Delaware, for the Southland Paper Mills, Inc. This machine is equipped with 67 Timken Bearings.

Paper quality begins at the fourdrinier, therefore anything that improves fourdrinier performance tends also to improve the product. By mounting table rolls, wire rolls, felt rolls, press rolls, breast rolls and couch rolls on Timken Tapered Roller Bearings a number of important advantages are obtained. Rolls turn easier and smoother; correct roll alignment and clearance are maintained indefinitely; lubrication is simplified; full protection against radial, thrust and combined loads is assured.

Resultant operating economies include reduced power demand; longer life for felts, lower maintenance expense; curtailed lubrication time with less lubricant required.

Timken Bearings are equally beneficial on dryer rolls and calender rolls. In fact paper production is at its highest—costs at their lowest when Timken Bearings are used from wet end to winder. The Timken Roller Bearing Company, Canton 6, Ohio.

**TIMKEN**

TRADE-MARK REG. U. S. PAT. OFF.

*TAPERED ROLLER BEARINGS*

sued on October 8, 1943, outlining the supply situation in the pulp and paper industry.

The Committee reveals in its final report that the combined requirements in 1944 for pulp and paper products of the United States, Canada, and the United Kingdom (including Newfoundland which furnishes additional supplies) are estimated to be equivalent to 23,597,000 cords of pulpwood. The combined supply estimate now stands at 20,956,000 cords, indicating an over-all deficit of 11 per cent. In the preliminary report issued in October, the prospective shortage was estimated to be 27 per cent, and the improvement shown by current estimates is encouraging.

This improvement is due in part to a further paring of requirements in the United States and Canada, coinciding with the issuance of further restrictions on consumption rates. The combined 1944 supply estimate of 20,956,000 cords, which includes further available inventories, is made up as follows by country of origin: Canada, 8,660,000 cords; Newfoundland, 444,000 cords; and the United States, 11,852,000 cords.

▶▶▶ THE OFFICE OF INDUSTRY ADVISORY Committees, WPB, announced February 22 the formation of the Waxed Paper Industry Advisory Committee. Charles E. Snow, Paper Division, has been appointed the Government Presiding Officer. The first meeting of the committee was held February 19.

## ADVISORY COMMITTEE CLAIMS PRODUCTION RESTS ON NEW MACH'Y

Production of the required quantities of specified paper and paperboard by the pulp and paper mills of this country will rest largely upon the ability of the industry to acquire new paper mill machinery, according to opinions expressed to the WPB by members of its Pulp and Paper Mill Machinery Industry Advisory Committee.

Increased use of wastepaper, and reduction in basis weights in paper making, have complicated normal standard practices, involving the use of new and changed equipment in many cases.

At present, the WPB is opposed to the release of additional metals and other materials for such purposes until certain phases of the European war have been successfully concluded. Therefore, requests for materials or more equipment must be based entirely upon their necessity for the maintenance or increased production of essential paper grades. However, a special committee appointed to study mill equipment reports that while heavily engaged in war work, some facilities are not too busy, and an increased amount of material could be handled for making paper mill equipment.

## NEW DIRECTIVE ON PAPER AND PAPERBOARD

Revoking and superseding WPB Direction No. 1 to Conservation Order M-242, which controls the reserve production of paper and paperboard, Direction No. 2 was issued on February 16 by WPB.

Under Direction No. 1, paper and paperboard manufacturers were required to reserve each calendar month, sufficient time and supplies to produce within the month the following percentages of each mill's production; such production to be disposed of as directed by WPB:

| | |
|---|---|
| Paperboard | 35 per cent |
| Condenser tissues | 100 per cent |
| Paper | 15 per cent |

Direction No. 2 requires that after March 1, the reserve percentages each month shall be as follows:

| | |
|---|---|
| Paperboard | 45 per cent |
| Condenser tissues | 100 per cent |
| Paper | 20 per cent |

## FLASH!

Complete control over the distribution of container board will be assumed by WPB after April 1, according to an announcement from Washington, March 6. It was stated this action has been necessitated because of the critical shortage of that commodity.

Under the new order, WPB may direct mills to produce specified types of board and ship it to specified persons, and all users of such board (who use more than two and a half tons per quarter) must obtain authorization from WPB before accepting delivery. The authorizations will be issued on a quarterly basis.

## WASTEPAPER ADVISORY COMMITTEE FORMED

Formation of a Paper Industry Waste Paper Advisory Committee, headed by Rex W. Hovey, WPB Paper Division, as the government presiding officer, is announced by the Office of Industry Advisory Committees, WPB.

Members of the committee are: Alfred W. Arenander, Jr., West Virginia Pulp and Paper Company, New York; Wayne Crotty, Bryant Paper Company, Kalamazoo, Michigan; C. K. Ferguson, Watervliet Paper Company, Watervliet, Michigan; C. W. Gallup, New York and Pennsylvania Company, Inc., New York; W. H. Kettra, Mead Corporation, Chillicothe, Ohio; Duncan MacMahon, Champion Paper and Fiber Company, Hamilton, Ohio; George W. Munson, Fitchburg Paper Company, Fitchburg, Massachusetts; Morgan Smith, Crocker-Burbank Company, Fitchburg, Massachusetts; Dwight Stocker, Michigan Paper Company, Plainwell, Michigan; and Earle Weaver, International Paper Company, New York.

▶▶▶ THE APPOINTMENT OF David J. Winton of Minneapolis as director of the Minneapolis Region of WPB is announced by Donald M. Nelson. Mr. Winton will take over the duties of F. Peavey Heffelfinger upon the latter's return to the vice presidency of the F. H. Peavey Company (Minneapolis) on or about May 1. In the meantime, Mr. Winton will serve as chief deputy. Mr. Winton is chairman of the board of the Winton Lumber Company of Minneapolis and also holds directorships in other lumber firms.

▶▶▶ EASTERN AND WESTERN members of the wastepaper consuming industry have renewed their agreement to purchase at OPA ceiling prices all properly processed paper offered to them, the Salvage Division of the WPB announced recently. The undertaking of the mills to provide an assured market for wastepaper collections, which has been in effect since October 1, 1943, was due to expire February 15, but the new arrangement will continue indefinitely, subject to 30 days' cancellation notice.

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## PRESENT PLAN TO END ABITIBI RECEIVERSHIP

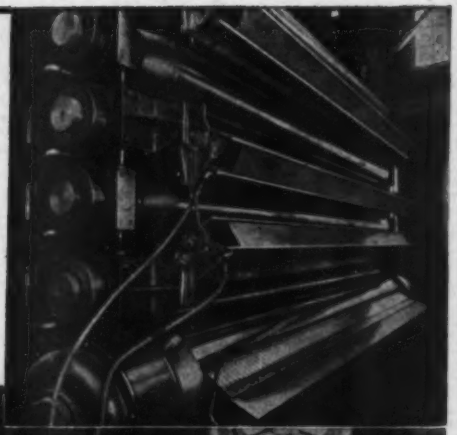
A tentative plan for consideration by security holders has been evolved by the special committee appointed for the purpose of removing the Abitibi Power and Paper Company from receivership, Premier Drew has announced.

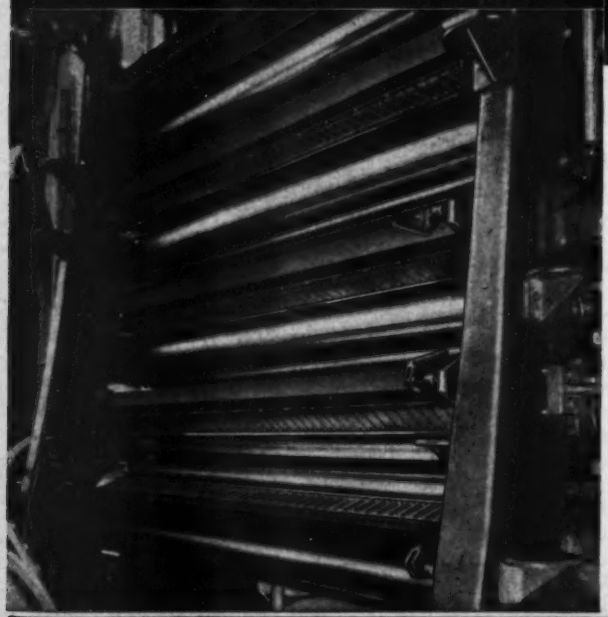
The plan is based on the belief that the debtor company should recognize, and in time pay, the whole of its obligation. The committee is of the opinion that there is no right to the claim put forth by the bondholders' committee for interest on interest, amounting to approximately $8,500,000. This claim makes inevitable a further delay in terminating the receivership of Abitibi, and, the Premier feels, is to be regretted.

On February 24 Attorney-General Blackwell introduced a bill in the Ontario Legislature to amend the Abitibi Moratorium Act, the purpose of which was to prevent the Abitibi

# VICKERY DOCTORS

*Keep 'Em Shining*





Vickery Doctored rolls will keep on doing their work better and will stay on the job longer and with less attention. That applies to every papermaking roll—press rolls, breast rolls, wire rolls, dryers, calender rolls, super-calender rolls.

Make sure your Vickery Doctors are working to the very best advantage. Get in touch with us if there's any question about installation, operation or maintenance.

**BIRD MACHINE COMPANY**

SOUTH WALPOLE • MASSACHUSETTS

properties from being sold "under the hammer." The result of the moratorium to date is that instead of bondholders receiving only 36 cents on the dollar, it appears likely they will receive 100 cents, the Attorney-General explained.

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## KVP BUYS BUILDING NEAR PHILA.—TO USE AS CONVERSION PLANT

Purchase of a new building located at Devon, approximately 15 miles from Philadelphia, by the Kalamazoo Vegetable Parchment Company, and the transfer of its eastern branch to the new location, was announced by R. A. Hayward, company president, at the recent annual meeting.

The branch is a conversion unit and will be equipped with presses, waxing equipment and rewinders. It is anticipated that the new move will result in expanded company operations.

The present company officers were re-elected, and C. Hubbard Kleinstuck, who became president of the First National Bank and Trust Company on January 1, was named director to fill the vacancy left by the passing of C. H. Stearns.

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▶▶▶ AN UNUSUALLY LARGE SHIPMENT of pulpwood recently was received by the Hoberg Paper Mills of Green Bay, Wisconsin. The lumber, which was consigned to the Hoberg Company by the Sawyer and Stoll Lumber Company of Escanaba, Michigan, totaled 43 cords, and arrived via the Chicago North Western Railway on a 65-foot gondola car.

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▶▶▶ GENERAL UNCERTAINTY as to the future of the paper industry, in view of the shortage of pulpwood and the added cost of producing paper at a below normal rate of operation, served to hold paper mill securities to previous levels, without participation in the generally better tone of other industrial stocks and bonds.

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## FORESTRY ASS'N TO APPRAISE NATION'S FOREST RESOURCES

An appraisal of the effect of the war on the forest resources of the country has been launched by the American Forestry Association. Postwar reconstruction and problems involving forest management and land economy will be dealt with on a factual basis. The survey, which it is estimated will take from two to three years to complete, will cover every forested state and county of the nation. It will have the co-operation and support of state and federal agencies and of the various forest industries.

Directing the survey is John B. Woods of Portland, Oregon, timber evaluation expert and former forester for the Lumber Code Authority under the NIRA. He will be assisted by a staff of well known specialists in forest appraisal, and by an advisory council of five members prominent in state and federal forestry, forest industry, and agriculture.

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▶▶▶ THE ENVIABLE RECORD of no disastrous forest fires in the past eighteen years in the Franquelin, Quebec, area, is due to the constant vigilance of fire inspector Clodomire Carbonneau, assistant Adelard Poudre, and their crew of forest rangers. They patrol the forests behind Franquelin and keep vigil from the fire towers. Inspectors install spark screens over the woods camp chimneys and follow woodsmen into the bush to see that "no smoking" regulations are observed.

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▶▶▶ A BILL DESIGNED to create an Ontario Forest Resources Commission will be introduced by the Drew Government at the Legislature session which opened on February 22, it is reported. Plans for a long-term forest policy, one that will exploit to the full the resources of northern and northwestern Ontario, are said to have been prepared by the Government. These embrace all phases of forest activity and will become operative in the postwar period.

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## NEW COMPANY KNOWN AS IROQUOIS BOARD MILLS

A new company known as the Iroquois Board Mills, Inc., with main offices and headquarters at Thomson, New York, has been organized by the A and P Corrugated Box Corporation, Lowell Massachusetts, and the Gibraltar Corrugated Paper Company, Inc., of North Bergen, New Jersey.

The new corporation, which was organized as of February 1 under the laws of the State of New York, will operate the paper mill at Thomson, formerly owned by A and P Corrugated Box Corporation and known as the Iroquois Mill Division.

H. L. Joachim, who has operated the Iroquois mill since its acquisition by A and P last year, continues as vice president and general manager of the new corporation. Officers and directors of the new corporation are comprised of officers and executives of the Gibraltar and the A and P companies.

▶▶▶ REVISED CEILING PRICES, effective at once, for pulpwood produced from the stump in Quebec, New Brunswick and Nova Scotia, were announced early in February by A. H. Williamson, timber controller for the Wartime Prices and Trade Board. The prices represent an approximate increase of 5 per cent over those previously set for the three provinces and apply to rough and peeled spruce and jack pine. Mr. Williamson stated this action is part of a joint move by the OPA in the United States and the WPTB in Canada to narrow the spread between domestic ceilings and prevailing export prices on pulpwood, and to increase the overall production of pulpwood in Canada.

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## STOCK QUOTATIONS

**New York Stock Exchange—Stocks**
**Closing Prices**

| | Feb. 25, 1944 | Jan. 25, 1944 |
|---|---|---|
| A. P. W. Paper Co... | 2⅜ | 2¼ |
| Celotex | 11¼ | 11½ |
| Same Preferred | 17½ | *17⅛–17½ |
| Certain-teed Products | *5⅜–5¾ | 6 |
| Same Preferred | 60 | 61⅞ |
| Champion P. & F. Co. | 26⅞ | 26½ |
| Same Preferred | *110⅜–111 | *110½–112 |
| Container Corp. | 20⅜ | 20½ |
| Cont. Diamond | 11⅞ | 11½ |
| Crown Zellerbach | 16½ | 16¼ |
| Same Preferred | 99¾ | 98 |
| Dixie Vortex | 16⅞ | 15 |
| Same "A" | 44⅞ | 44¼ |
| Robert Gair | 3⅜ | *3–3⅛ |
| Same Preferred | 14⅞ | 14¾ |
| Gaylord Container | 13⅞ | *13½–13¾ |
| Same Preferred | *53–54½ | *51–52½ |
| International Paper | 14½ | 14¼ |
| Same Preferred | 69⅞ | 68¾ |
| Kimberly-Clark | *32–33 | *32½–33 |
| MacAndrews & Forbes | 26¾ | *26¼–28 |
| Masonite | 40½ | 39½ |
| Mead Corp. | 8⅞ | 8½ |
| Same Preferred | *86½–88 | 86 |
| Paraffine Cos | *44½–45½ | 47½ |
| Same Preferred | 104¾ | 106 |
| Rayonier | 13⅛ | 13¼ |
| Same Preferred | 28½ | 30 |
| Scott Paper | 41¾ | *39¾–40 |
| Same 4½% Pfd. | *109–111½ | 109½–110 |
| Same 4% Pfd. | *107½–108½ | 108⅜ |
| Union Bag & Paper | 9⅜ | 9⅜ |
| United Paperboard | 4½ | 4¼ |
| U. S. Gypsum | 71½ | 74 |
| Same Preferred | 176 | *169–172 |

**New York Stock Exchange—Bonds**

| | | |
|---|---|---|
| Abitibi 5% | ..... | 72⅜ |
| Celotex 3¾% | 102⅜ | ..... |
| Certain-teed 5½% | 101 | 100⅜ |
| Champion P.&F.4½% | ..... | ..... |
| International Paper 5% | 104½ | 104⅛ |
| Same 6% | 108 | ..... |

**New York Curb Exchange—Stocks**

| | | |
|---|---|---|
| Am. Boxboard | ..... | ..... |
| Great Northern | ..... | ..... |
| Hummel Ross | 5 | 4⅜ |
| St. Regis | 5⅜ | 4⅜ |
| Taggart | ..... | ..... |
| United Wall Paper | 2½ | 2½ |

*Closing Bid and Asked Prices.

*O.W.I. photo by Palmer, in an Allegheny Ludlum Plant*

# GRAY... *and Skilled*...

## IN THE SERVICE OF STAINLESS STEEL

THE production of alloy steels is essentially a matter of technique. Many of them are complex, metallurgically; and all of them are compounded to a nicety and processed to specific requirements of surface finish and physical properties.

More often than not, the ability to produce these alloy steels successfully to such close limits, and the added ability to multiply the tonnage many times under the necessities of war, come as a result of having developed the *original* technique. The accumulated knowledge and experience of the mill technicians and men who developed an idea into a special steel, and shouldered the trials of pioneering it commercially, make all the difference.

For Allegheny Ludlum, that is true in the cases of stainless steel, gasoline engine valve steel, and many alloys for electrical purposes. It is true also of certain tool and die steels, notably the DBL High Speed Steel analysis, which has replaced "18-4-1" on the majority of the nation's production jobs.

These steels of our development are among the most vital of the war. We want to place our "know-how" completely at your disposal, to help you select them wisely and use them well, without waste. ● Call on us for technical and fabricating data, or for the help of our Technical Staff.

ADDRESS DEPT. PI-20

**Allegheny Ludlum**
**STEEL CORPORATION**
BRACKENRIDGE, PENNSYLVANIA

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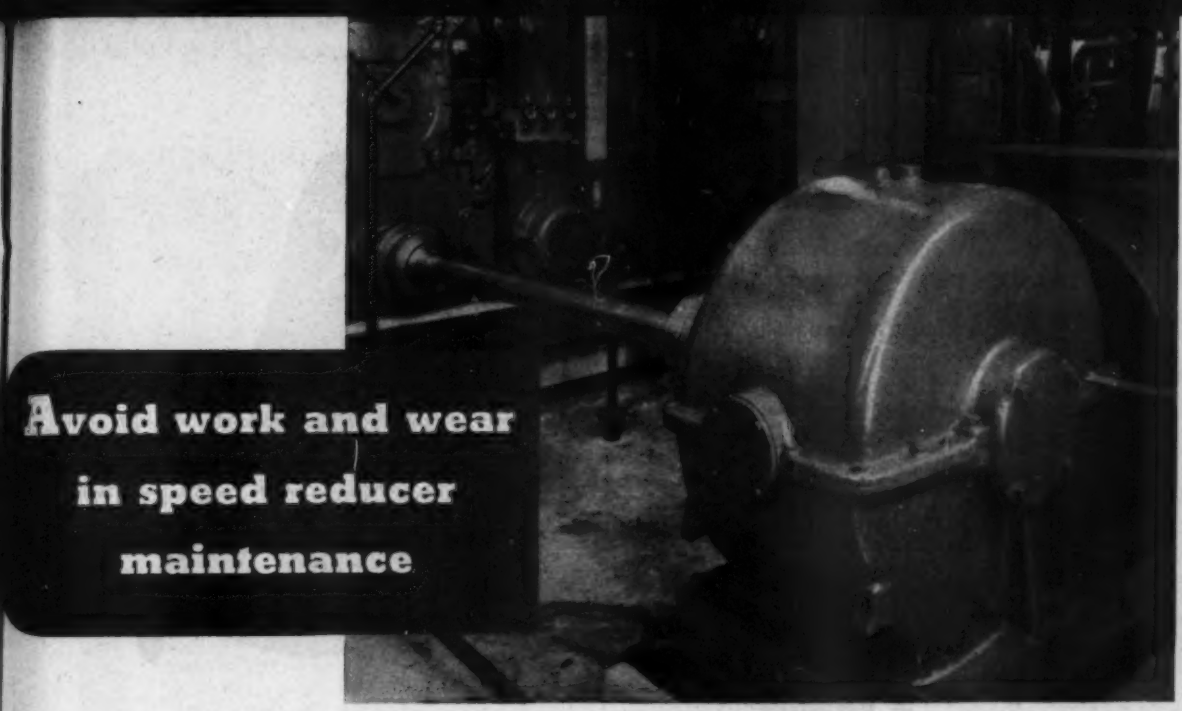
A-8825 . . . W & D

WEST COAST HEMLOCK PULP

We look upon each assignment of Weyerhaeuser West Coast Sulphite pulp as an opportunity to extend our full cooperation in arranging all details of shipments to the best of our ability to meet the requirements of authorized consumers.

PULP DIVISION ‡ WEYERHAEUSER TIMBER COMPANY



# Avoid work and wear in speed reducer maintenance

Barring mechanical faults in equipment, the right oil will help avoid numerous difficulties which haunt overworked speed reducers or bath-oiled gears—particularly deposit, emulsion, foaming and starting troubles. If you find it necessary to clean gear cases or change oil in them frequently, or if you find too much gear wear, it should pay you to review your oil requirements.

Look into the qualities of Stanoil. Many operators have found it ideal for these services. Why it has proved so effective is discussed in the "trouble" and "cure" columns at the right.

Let a Standard Lubrication Engineer help you test the right grade of Stanoil. Call the nearest Standard Oil Company (Indiana) office, or write 910 S. Michigan Ave., Chicago 5, Ill., for the Engineer nearest you. In Nebraska, write Standard Oil Company of Nebraska at Omaha 2.

*Oil is Ammunition . . . Use it Wisely*

STANOIL

## Causes of oil trouble in speed reducers

**Deposits.** Under heat and agitation in the presence of oxygen, some oils oxidize—that is, certain unstable hydrocarbons undergo a chemical change. Some form asphaltenes which settle out of the oil. Others form acidic substances which attack certain metals, and form metallic soaps. Both cause deposits which may clog oil passages and lead to excessive wear on bearings and gears.

**Emulsions and foaming.** Acidity also reduces the demulsibility of oil. Any moisture that enters gear cases through leakage or condensation, will mix with the oil and form an emulsion—particularly if dirt or foreign matter is present. This reduces the oil's lubricating quality, causes foaming and may also cause clogging of oil lines.

**Hard starting.** This trouble occurs most frequently where speed reducers must operate under widely varying temperatures. These units may be warm enough when running to require a fairly heavy oil. But the same oil, at cold starting temperatures, is usually stiff—it boosts power demands. Units may refuse to start at all until heated. When lighter oils are used, starting is easy, but as the temperature rises, most light oils thin out excessively, and cannot give proper protection under load.

## How Stanoil helps avoid them

**High stability.** The problem in producing an oil that reduces deposits is to remove the unstable hydrocarbons—those that unite readily with oxygen. This has been accomplished in Stanoil by a unique refining process. Stanoil has high stability against oxidation. Frequent oil changes made necessary because of high oil acidity, or gear case cleaning to remove deposits, are materially reduced with Stanoil.

**Good demulsibility.** The high oxidation stability of Stanoil gives it great resistance to acidity formation—one reason why Stanoil does not emulsify readily with water even in the presence of dirt. Also, Stanoil separates easily from water and may be used for long periods without emulsion or foaming trouble.

**High viscosity index and low pour test.** The combination of these qualities is needed to eliminate starting troubles. High V. I. prevents excessive thickening at low temperatures, and excessive thinning out at high temperatures. Low pour point prevents oil flow stoppage caused by paraffin wax formation. All grades of Stanoil have this combination of qualities in very high degree. That is why the same grade of Stanoil helps cold speed reducers to start more easily, yet gives perfect lubrication under high operating temperatures.

**STANDARD OIL COMPANY (INDIANA)** STANDARD SERVICE

★ LUBRICATION ENGINEERING

LUBRICATION ENGINEERING • • LUBRICATION ENGINEERING • • LUBRICATION ENGINEERING • • LUBRICATIO

# Congratulations

## ON A FINE JOB, WELL DONE!

THE Treasury "Star" Flag—the bond-buying counterpart of the Army-Navy "E"—marks plants with at least 90% of personnel participating in the Payroll Savings Plan to at least 10% of gross payroll, *and also having reached, or topped, a War Loan Drive quota!*

The successful close of the 4th War Loan Drive finds many more "Star" Flags than ever before flying over the industrial plants of America. To all these, go the heartiest thanks of the nation, and the deep appreciation of the Treasury Department for a great job! And to those who may not quite have qualified for the "Star," go equally sincere thanks—and the confidence that soon they, too, will join the ranks of the "Star" fliers.

One thought that many concerns have found helpful in stepping up the intake from their Payroll Savings Plans is this. In many cases the Treasury Representative in a plant has been able to point out the fact that during *Loan Drive periods* the employees have found it possible to spare much more than they had counted on when setting up their original subscription, and that—*when properly approached*—a very substantial fraction of such employees will decide they can well afford a distinct increase in their current Payroll Savings Plan.

Talk this over with your Treasury Representative—it offers important possibilities when correctly handled. And again accept the Treasury Department's congratulations for your fine work in helping to put over the 4th War Loan.

LET'S **ALL** KEEP
BACKING THE ATTACK
WITH **WAR BONDS**

*The Treasury Department acknowledges with appreciation the publication of this message by*

**THE PAPER INDUSTRY AND PAPER WORLD**

*This is an official U. S. Treasury advertisement—prepared under auspices of Treasury Department and War Advertising Council.*

# SHORTS STYMIED

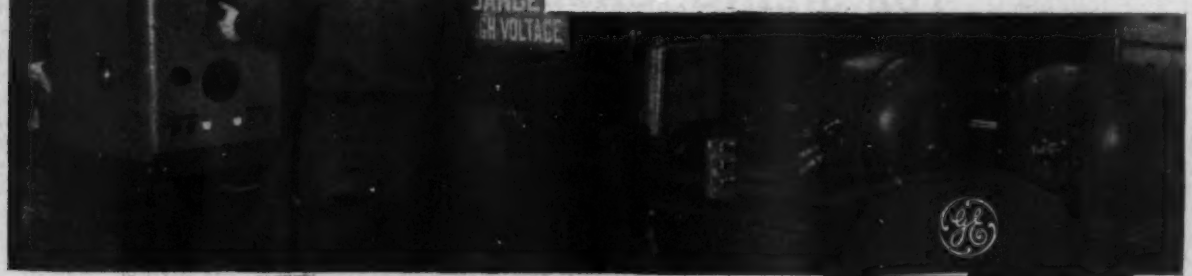
Voltage surges which accompany switching and frequent starting and stopping of motors impose high dielectric stresses on the coil insulation, and can cause harmful short circuits. Yet this is an unavoidable condition of service for many motors.

The grinder shown here, for example, starts and stops every time a finished part is removed and a new part inserted. But the two Tri-Clad motors that drive it have been built to withstand safely the voltage surges ordinarily encountered in this type of service. Their ability to "stymie" shorts was proved by the new General Electric test described below.

External grinder, equipped with two Tri-Clad motors, installed in the mill-machinery manufacturing plant of the Rite-Way Products Company, Chicago, Ill.

## New high-potential, electronic surge-tester verifies strength of TRI CLAD motor windings

This electronic test of insulation makes a "cardiogram" of every Tri-Clad motor winding, ferreting out weaknesses that might lead to shorts caused by voltage surges in service. It tests each turn, coil, and phase group of the windings for adequate insulation strength to withstand the "steep front" high-voltage surges of actual service. First developed and applied by G.E., it's one of the production tests which all Tri-Clad motors must pass as they come off our production lines. — *General Electric Company, Schenectady, N. Y.*



GENERAL ELECTRIC

TRI CLAD MOTORS

Each week 192,000 G-E employees purchase more than a million dollars' worth of War Bonds.

*Converts*

# CORN STARCH

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**R. T. VANDERBILT CO., INC.**

*230 Park Avenue, New York City*

# Editorial

## A Mission To Accomplish

▶▶▶ AT THE AMERICAN Paper and Pulp Association luncheon in New York City, before a large gathering of representative paper men from all over the country, Donald Nelson, Chairman of the War Production Board, said that it was only within the past sixty days that he had become aware of the essentiality of paper and paper products to our economy.

That statement means that the long fight the paper industry has made to gain essential recognition for its product finally has been won.

That being true, where do we go from here?

In a way, Mr. Nelson indicated the road to follow. He supplemented his statement on essentiality by appealing to the industry to give the WPB its utmost all-out aid to help it lick the toughest problem—the most acute and baffling shortage problem—with which it has been confronted so far.

It goes without saying that the industry will comply with his request. However, all of its brains and facilities plus the co-operative power of the War Production Board will be required to do the job.

Now that the industry has been officially recognized as essential to the war effort, it can command the aid of the War Manpower Commission, transportation, and critical materials necessary to solve the shortage. Manpower shortage is the outstanding problem.

There is no shortage of wood, but there is a shortage of men to cut the wood. Where and how are we to get them? We must have the wood. Without it, there will be no pulp. No pulp means no paper. No paper means no peace.

It is the consensus of opinion that a continuous, uninterrupted flow of pulpwood to the mills is to be assured.

The paper industry is the Nation's sixth largest industry. Its products are indispensable to the national economy—they are essential commodities.

With the eager, active co-operation of the War Production Board, the leaders of the industry should lend assistance to all far-reaching systems for obtaining raw materials in sufficient quantities to supply all of the industry's mills. Until this has been done, we cannot report "Mission Accomplished."

## Three Quotations

▶▶▶ HERE ARE THREE QUOTATIONS to read and for meditation:

1) "Today, America faces a grave problem — the readjustment of human relations. It is your problem, because you and I are Americans. The time has come when the classic principles of the Declaration of Independence must be wholly removed from the realm of academic theory and translated into every-day practice."

2) "The war has taught us the value of waste materials and to the papermaker of waste paper in particular. In the future it will be used in greater quantities and undoubtedly to better advantage than in prewar times. As the world's supply of pulpwood diminishes in proportion to the increased demand for paper, the economy of the recovery of waste paper will become more apparent every day. The question of the systematic recovery of waste paper will have to be faced first by the country which consumes the largest amount of paper per capita of the population."

3) "The utilization of wood pulp as a source of nitrocellulose has been a mooted question for many years . . . With the beginning of the world war, the demand for cotton for the manufacture of munitions was very materially increased, and at the time of the entry of this country into the war, it was thought possible that the cotton crop might fall short of requirements . . . A number of pulps were prepared and submitted . . . for acceptance tests . . . Arsenal authorities in comparing laboratory tests with the surveillance tests of the same powder seem to justify the conclusion that no trouble would be encountered with the wood pulp powders."

Now that you have read the quotations and possibly have meditated upon them a bit, would you venture a guess as to the time each quotation made its published appearance? Would you surmise that each of them is of comparatively recent origin, or at any rate, since Pearl Harbor? If such might be your surmisal, it would be in error. Actually they all date back to the days immediately following World War I. Yet, how similar might be our thoughts today.

The first quotation is taken from an article "Every Man's Problem," by George Frank Lord, Director of Advertising, E. I. du Pont de Nemours, Inc.; the second, from a presentation on "Waste Paper Stock as a Raw Material" by James Strachan, Donside Paper Mills (Scotland); and the third, from a manuscript, entitled "Nitrating of Woodpulp Cellulose" by Sidney D. Wells and Vance P. Edwardes, Engineers in Forest Products, Forest Products Laboratory.

These three articles appeared in two issues of *Paper*, the first in its issue of May 14, 1919; the other two, its issue of February 12, 1919.

# A Milestone . . . 25 Years

▶▶▶ REMEMBER WHEN you were twenty-five years old? You thought then, and may still believe that twenty-five is about the ideal age—time enough to have quaffed the sweetness of accomplishments; long enough to have tasted the bitterness of failure. Time enough to have realized the strengthening effect of struggle; the proper use of muscles while they are yet supple; the discrimination that comes with accurate observation. Time enough to have become discerning, yet young enough to be daring. Yes, it's great to be twenty-five years old!

By now you've guessed it. Yes, this magazine is twenty-five years old this month. The first issue made its appearance in April, 1919, and immediately started to begin things.

The paper and pulp people are by no means static. Within this slim quarter of a century many evidences of progress have been recorded. The industry has grown throughout the South. In that time new uses for paper and pulp have been developed. In our present emergency not only do the products of the pulp and paper industry help blow up Hitler and Hirohito, but they help (through insulation) to keep little sister's room warm during cold winter months. These products also are being used to make food flavoring, woven fabrics, alcohol and numerous plastic commodities. During the life of this magazine, industry has seen the generation of power by water more fully develop; the advance of electrical power has been enjoyed within the paper industry.

During the early life of *The Paper Industry*, its pages contained various applications of that ageless formula: "Take a small amount of fiber, add to it a large amount of power, an enormous amount of water, some machinery, and a pinch of chemicals; mix all these ingredients with some brains, and you have a good grade of paper . . . the more brains, the better the paper." And it has been during the past quarter-century that this magazine has seen the industry increasing the percentage of brains to the other necessary ingredients. That is why the industry today is not only producing far finer papers, for almost any purpose, than ever before, but the paper industry's raw materials are being extended for use in hitherto unthought-of products.

A Silver Anniversary is only a milestone—it is no time to think in retrospect nor to rest on our oars. The pulp and paper industry has many more competitors than it had twenty-five years ago. Then, the coal, the petroleum, and the chemical industries were not considered competitive. Today, they are, most actively, competitors of the pulp and paper industry. This industry, like its competitors, must look ahead, not only to the further extension of its products to new fields, but more especially, to the reduction of production costs within our own mills. Today, the industry is pushing on, but it may find the going hard later on if it does not, in the interim, reduce its manufacturing costs —power and labor—per ton of paper. This is not a prediction that the industry faces extinction if these changes are not accomplished, but it *is* to say that it faces loss of business and permanent reduction of volume if such measures are not enacted.

That peaceful tomorrow which will surely be ours (it can come none too soon) will bring forth a new era of mechanical development which will make it incumbent upon us to scrap that which we thought was good for that which proves to be better. Obsolescence is a word we must learn to welcome, not abhor. Change is a word we must realize as a symbol of progress —not adventure.

The pulp and paper industry has much to do to catch up with some other industries. Some of our contemporaries are far ahead of us in production methods and plants procedure. This should not continue. It cannot continue if we are to hold what we have, then expand and grow.

Twenty-five years ago the largest single industry in the country (aside from agriculture) was the railroad industry. During the interim, we have seen the lead in American industry shift from the railroads to the automotive industry—and from thence to the aviation industry. Today, the aviation industry is America's giant industry, but tomorrow it may well be displaced by others, perhaps let us say, the air-conditioning industry, the field of electronics, or what not. There is nothing permanent except change—and, this being true, we of the pulp and paper industry have need for greater alertness to the development of new and greater uses for our product; we should also watch for any invasion of our field by other products.

The development of calcimine cost this industry untold thousands of miles of wall paper—and who is there to say, including the makers of that wall wash, that it is anywhere nearly as good as paper. The development of better engraving and printing processes has heaped upon this industry a tremendous demand for more and finer papers. To raise the literacy of some nations to the level of Americans would impose upon this industry a demand for paper three times our present production.

Industrial expansion comes from within, it is true. But it is of greater truth that industrial expansion also comes from without. We are affected by everyone and everything, whether it be the chemical plant that makes paint or the little red school house that makes literacy. In these days of rapid industrial flux, when a single decade may see the expansion or decline of an entire industry; we must be alert to every development however extraneous.

More and more research must be demanded of machinery manufacturers, which will permit us to produce a ton of still better paper at much lower costs. The paper industry must do the necessary research toward the development of better papers. It must invite from the outside, consideration of our raw materials and half-finished products for their application to uses now unknown.

# *for* CONVEYOR AND DRIVE MAINTENANCE PARTS SERVICE CHECK WITH LINK-BELT

CHAINS FOR CONVEYORS AND DRIVES

SPEED REDUCERS—HERRINGBONE, WORM & MOTORIZED TYPES

TROUGHING IDLERS FOR EVERY SERVICE

TRANSMISSION UNITS OF ALL KINDS

✓ • Keep the wheels turning at top production efficiency. Prevent over-worked machines and equipment from breaking down. Frequent and thorough inspection of your equipment will detect potential failures, and prompt attention to extra care and maintenance will avert major repairs. Check your materials handling and power transmitting equipment now and place orders for parts likely to require early replacements.

Our engineering staff is at your service.

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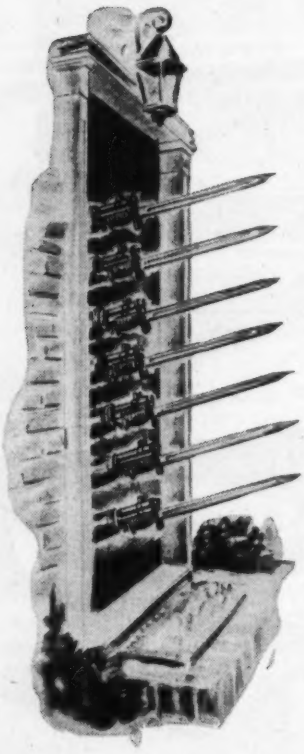
**LINK-BELT PRODUCTS INCLUDE:** Chains and attachments of malleable iron, Promal, steel and other metals . . Silverstreak Silent Chain Drives . . Silverlink Roller Chains and Sprockets . . P. I. V. Gear Variable Speed Drives . . Speed Reducers . . Log Hauls . . Slasher Table Chains . . Conveyors to and from barking drums . . Chains for suspending and driving barking drums . . Sorting Table Conveyors . . Chip, Chemical and Refuse Conveyors . . Log Stackers . . Cranes—Crawler and Rubber-mounted types . . Hogged Fuel Handling Equipment . . Skip Hoists . . Conveyors of Belt, Apron, Bulk-Flo, Flight and Screw types . . Automatic Underfeed Screw-type Stokers . . Portable Conveyors, Loaders and Unloaders . . Vibrating Screens . . Water-Intake Screens . . Roto-Louvre Heat Dryers and Coolers . . Screen type Dryers . . Car Spotters . . Sprockets . . Gears . . Pulleys . . Couplings . . Clutches . . Ball, Roller and Babbitted Bearings . . Grease Cups . . Safety Collars . . Base Plates . . Shafting . . Paper Roll Handling Equipment . . Special Machinery. Send for catalog of particular item in which you are interested.

9138-J

# LINK-BELT

## EQUIPMENT *for* EFFICIENT CONVEYING *and* POWER TRANSMISSION

# The fight on the doorstep



THIS WAR can't be won on battlefields alone. One of the most critical campaigns of all must be waged right on the doorstep of every family in America.

This is the fight against higher prices and higher wages. It's a fight that *must* be won... or victories on battlefields will be meaningless.

It's like this. In America this year, our total income after taxes will be about 133 billion dollars. But there'll be only about 93 billion dollars' worth of goods to spend it on. If we all start trying to buy as much as we can, prices will shoot up.

As prices rise, people will ask for—and, in many cases, get—higher wages. That will put up the cost of manufacturing, so up will go prices again. Then we'll need another pay raise. If we get it, prices rise again. It's a vicious circle.

The Government has done a lot to help keep prices down. It has put ceilings on food and rent... has rationed scarce articles. But the Government can't do it all alone.

It needs *your help!*

Your part in this fight won't be easy. It will mean foregoing luxuries, perhaps doing without a few necessities. Tough? Maybe... but don't say that where the veterans of Italy and New Britain can hear you!

You *want* to do your part, of course. So do we all... farmers, laborers, white-collar workers, business executives. And the way to do your part *right* now is to observe the following seven rules for Victory and a prosperous peace...

**1. Buy only what you NEED.** And before you buy anything, remember that patriotic little jingle: "Use it up. Wear it out. Make it do or do without."

**2. Keep your OWN prices DOWN!** If you sell goods, or your own time and labor, *don't ask for more money* than you absolutely must! No matter who tries to talk you into asking more... *don't listen!*

**3. No matter how badly you need something**... *never pay more than the posted ceiling price!* Don't buy rationed goods without giving up the required coupons. If you do, you're helping the Black Market gang—hurting yourself!

**4. Pay your taxes cheerfully!** Taxes are the cheapest way to pay for a war! The MORE taxes you pay now—when you have some extra money—the LESS taxes you'll pay later on!

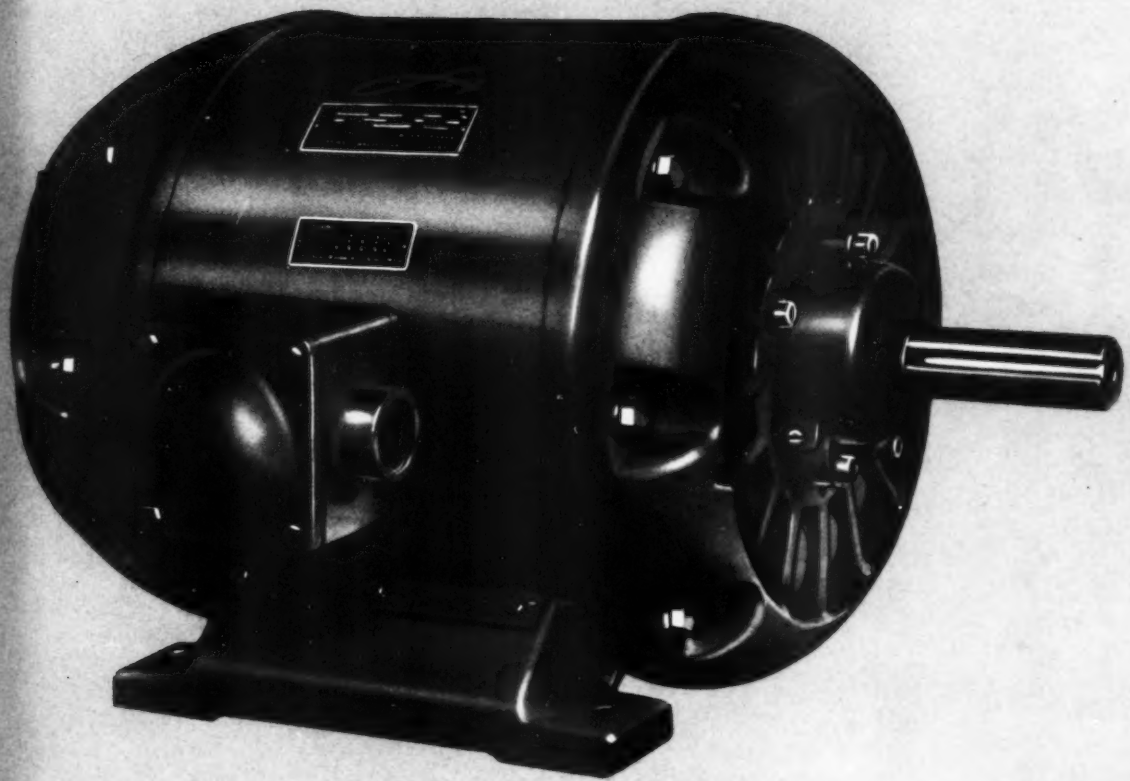
**5. Pay off old debts.** Don't make any new ones! Get, *and stay,* square with the world!

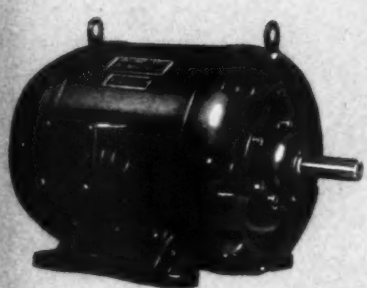
**6. Start a savings account.** Make regular deposits, often! Buy life insurance. Keep your premiums paid up.

**7. Buy War Bonds . . . regularly and often!** *And hold on to them!* Don't just buy them with spare cash you can easily do without. Invest every dime and dollar you don't actually NEED... even if it *hurts* to give those dimes and dollars up!

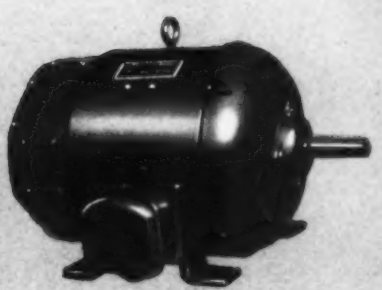
**Use it up... Wear it out.**
**Make it do... Or do without.**

A United States War message prepared by the War Advertising Council, approved by the Office of War Information, and contributed by the Magazine Publishers of America.





*There is a size and type* **LOUIS ALLIS** *electric motor for every industrial requirement.*



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# *Your Electric Motor Requirements*

**The day of trying to use a standard motor for a special job is about over.**

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***For over forty years we have been developing special motors for special jobs—our engineering department has a wealth of experience along this line—***

* * *

**Our engineering development department has created many outstanding — perhaps revolutionary — improvements in electric motor design, construction and performance that are now playing an important role in helping win this war.**

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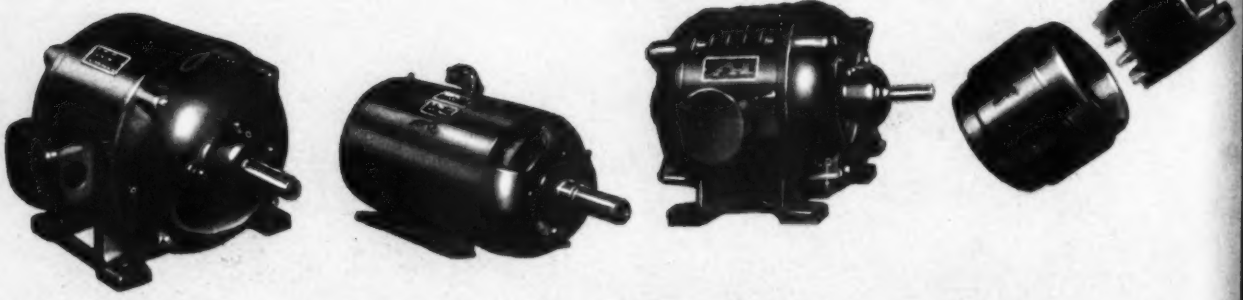
**Our engineering development department will welcome the opportunity of discussing your post-war electric motor problems with you.**

***THE LOUIS ALLIS CO., MILWAUKEE 7, WIS.***



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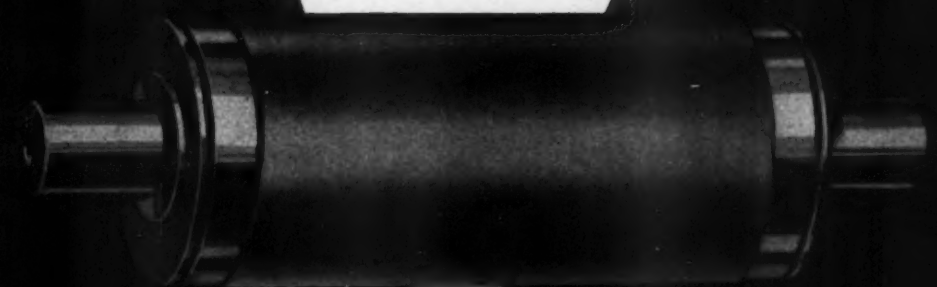

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# Why the CASH STANDARD Streamlined PRESSURE REDUCING VALVE TYPE 1000

## . . . . DOESN'T BECOME GUMMED UP FROM DIRT-SCALE AND VISCOUS MATTER . .

Available in sizes ¼" to 2". Each size with expanded outlet if desired.

● There are no complicated inside works in the "1000" valve. As a matter of fact there is only the one vital moving part — the seat piston. There are no restricted passages, no small ports, no aggregation of close fits. It's streamlined all of the way.

The seat piston is opened in a positive manner by the force of the initial pressure and is closed in an equally positive manner by the force exerted by the delivery pressure on the diaphragm. The seat piston is tied to the diaphragm by the rocker arm so that when the diaphragm moves it must move too.

Thus, the positive moving valve arrangement in STREAMLINED housing, with its continuous-duty performance insures against trouble from gumming up, thereby minimizing maintenance.

## PERFORMANCE RESULTS FROM *Streamlined Flow*

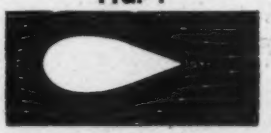
1. Maximum Capacity when needed most
2. Accurate Pressure Control under toughest working conditions
3. Trouble-free Service
4. Smooth Operation
5. Tight Closure
6. Accurate Regulation
7. Speedier Production Results
8. Elimination of failures
9. Constant Delivery Pressure
10. Cost Saving Operation
11. No Spoilage
12. Practically zero in maintenance costs

*Write for Bulletin "1000" which gives details on the performance of this "Streamlined" 1000 valve and its benefits.*

## *How Streamline Design Works*

● Flow has been streamlined for straight flow into the delivery passage and jet. See FIG. 1. The fluid

FIG.-1

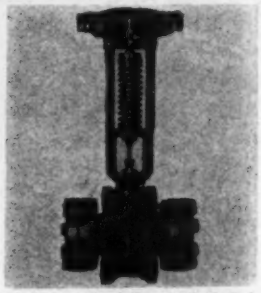


flows smoothly around this valve with no back eddies to cause turbulence. See FIG. 2, on the downstream side of its trailing edge. In a reducing valve all the pressure drop or work of pressure reduction should occur at one place, namely where the valve throttles flow, and not on the downstream side of the valve. Where you have downstream turbulence, See FIG. 2, the greatest amount of turbulence with resultant greatest pressure drop will occur when you want maximum flow and therefore want least pressure drop—if the delivery pressure is to be maintained. With

FIG.-2

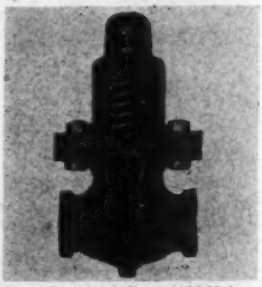
Streamlined Flow, See FIG. 1, you get maximum capacity, plus close delivery pressure control.

## OTHER VALVES *from the* CASH STANDARD LINE



Cash Standard Type 33 Relief Valve; in various metals to handle nearly all fluids. Has Roller guides on valve spindle; also roller bearing to take care of spring torsion. Sizes ½" to 3" screwed ends; 1" to 12" flanged ends. Bulletin 971.

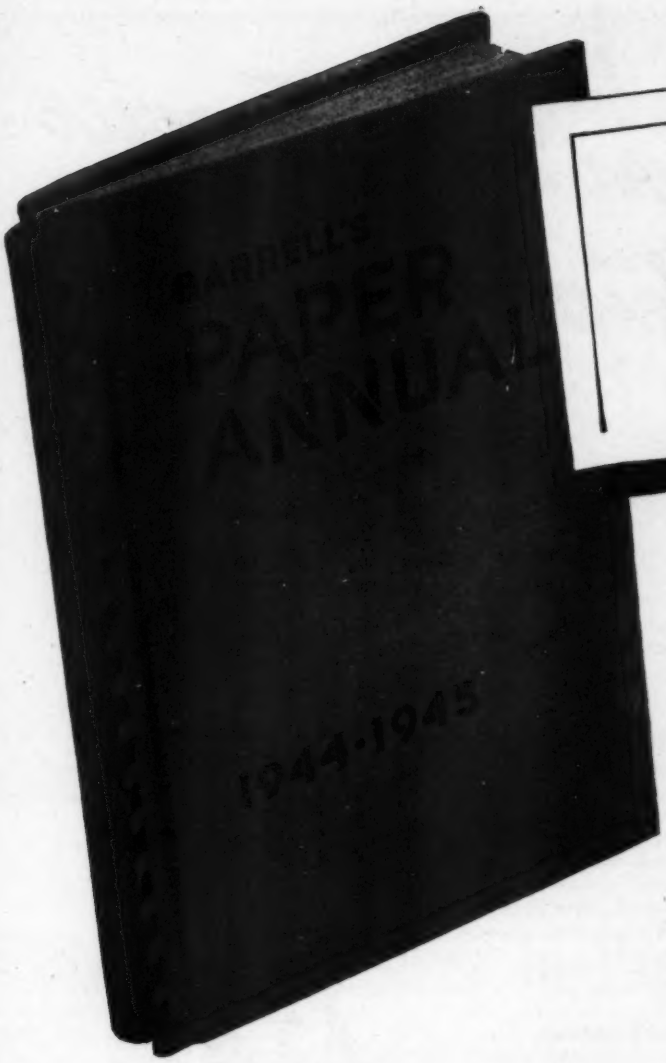
Cash Standard Type Q Relief Valve has side inlet, bottom outlet. Popular for pump by-pass use. Sizes ½" to 2" screwed ends. Relief pressures up to 350 lbs., temperatures up to 500°F. Bulletin 943.



Cash Standard Type 4190 Valve for relief (bypass) use; holds constant valve inlet pressure regardless of changes in load or outlet pressure. Multiport—large capacity. Iron or bronze bodies; iron or bronze trim. Sizes ½" to 2" screwed ends; 2" to 6" flanged ends. Bulletin 952.

CASH STANDARD CONTROLS . . VALVES

**A. W. CASH COMPANY**
DECATUR, ILLINOIS

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**RYERSON**

*A ledge face in the huge Celite deposit owned and developed by Johns-Manville at Lompoc, Calif.*

# Diatomaceous Silica In Paper

**R. G. QUINN[1] and C. J. O'NEIL[2]**
**Johns-Manville Corporation**

▶▶▶ DIATOMACEOUS SILICA, also known as diatomaceous earth, diatomite, infusorial earth and kieselguhr, is an amorphous silica formed from the residues of aquatic plants known as diatoms. These are a kind of microscopic plant life which grew in great profusion in past geological periods and which are abundant even today. This type of silica is composed almost entirely of the fossil remains of the diatoms. Under high magnification, these fossils are revealed as unbelievably thin, transparent valves or shells of diverse shapes with ornate and symmetrical markings. The average diatom is so small that some thousands or more must be laid end to end to equal one inch. The illustrations show some jewel-like specimens of varied shapes. Great quantities of these diatoms settled at the bottom of the pre-historic Pacific Ocean. The sea floor has since risen and diatomaceous silica is found in some coastal areas in stratified deposits sometimes over 1,000 feet thick, such as the Celite deposits near Lompoc, California.

### Properties of Interest to the Papermaker

Valuable and characteristic properties of diatomaceous silica are chemical inertness, great bulk, minute porosity, diverse shapes, extreme fineness, high absorption and, in special processed grades, very high brightness. It is readily wetted by water and disperses quickly.

One of the early industrial applications for diatomaceous silica was in filtration work. In filtration, a coating of diatomaceous silica powder is formed upon a fine mesh wire retaining screen by simply pumping into the body of the filter a suspension of diatomaceous silica in the liquid involved. The diatomaceous silica is removed upon the screen as an even, porous coating, usually referred to as the cake. This cake, due to the varied sizes and shapes of the microscopic diatoms, contains countless minute flow channels through it. In fact, these channels make up almost 90 per cent of the volume of the cake. Their cross section is so small that they trap and retain the solid suspended impurity particles from the liquid but their number is so great that the filter cake can operate for a long time before it becomes clogged by the removed impurities. For example, in the brewing industry, the removal of impurities and turbidity is accomplished by pressure filtration with diatomaceous silica. Sugar, oils, and many chemicals are clarified because of the ability of diatomaceous particles to form lattice structures capable of entraining fine particles

(1) Section Chief, Paper Section, Johns-Manville Research Laboratories, Manville, New Jersey. (2) Staff Manager, Filtration and Filler Department, Johns-Manville Sales Corporation, New York City.

and yet providing interstitial channels for the passage of liquids at high rates of flow. In paper, a similar function is performed. The diatomaceous silica in the sheet provides additional paths for water to get to the surfaces of the sheet. This may occur on the wire and particularly at the suction boxes. The removal of water beyond that which is free draining is enhanced because the presence of the diatomaceous silica voids accelerate the passage of water.

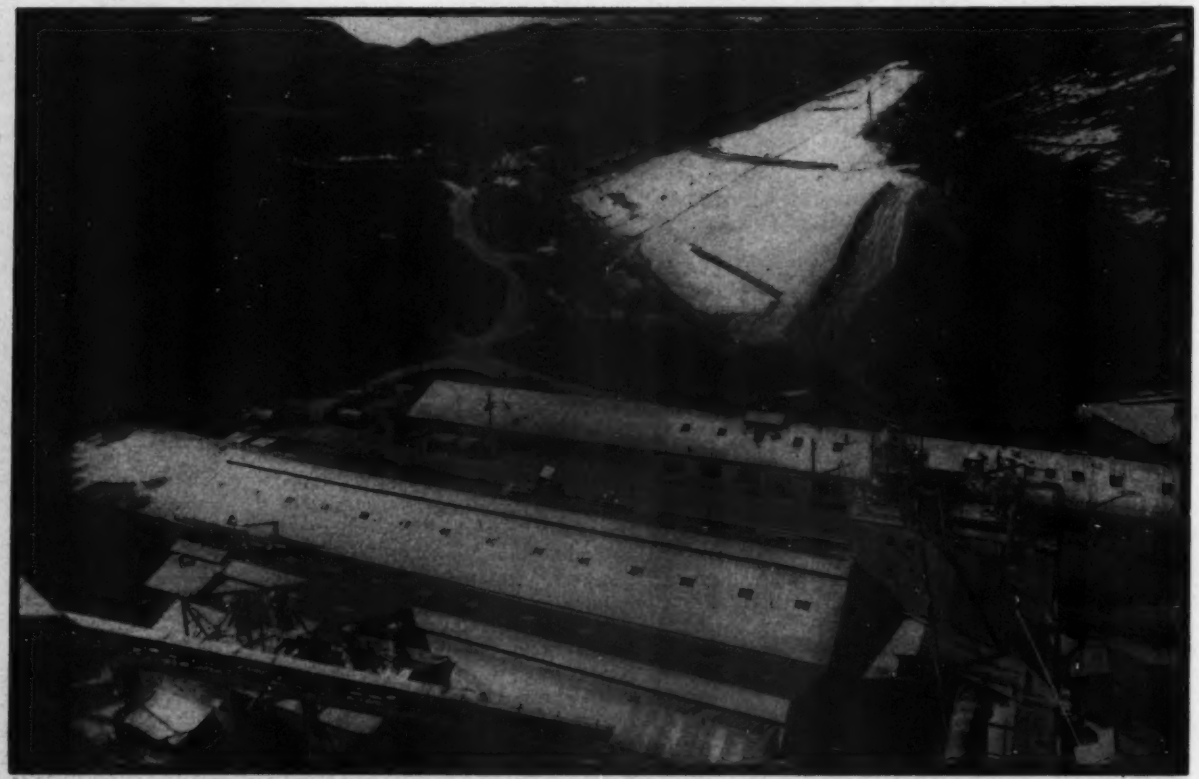
In cylinder machine operation, diatomaceous silica functions as a drainage aid at the couch. This action reduces the tendency to disrupt formation of the sheet at the nip between the felt and the mold because of more rapid water movement through the sheet. The higher surface friction of diatomaceous silica stocks also serves to reduce slippage at this point. Acceleration of water removal and higher surface friction are of importance also at the presses where crushing and checking are to be avoided.

Suspensions of diatomaceous silica in water have infinitely high drainage rates on the conventional freeness scale. As a filler, diatomaceous silica is unique as even at abnormally high percentages in the furnish it will not slow down the drainage characteristics of the stock. On very slow stocks an increase in freeness is sometimes attained with diatomaceous silica. Whether this result is due to improved porosity or to the tendency to prevent early flocculation of fiber, or both, is a point difficult to determine. The prevention of flocculation is, however, of consequence in the initial stages of the formation of the sheet itself. By separating the fibers, the stock is offered to the forming wire more evenly. The mat initially deposited is less likely to have pockets of high and low resistance to drainage, so that additional stock is picked up or distributed more evenly. These factors combine to improve the smoothness of the sheet.

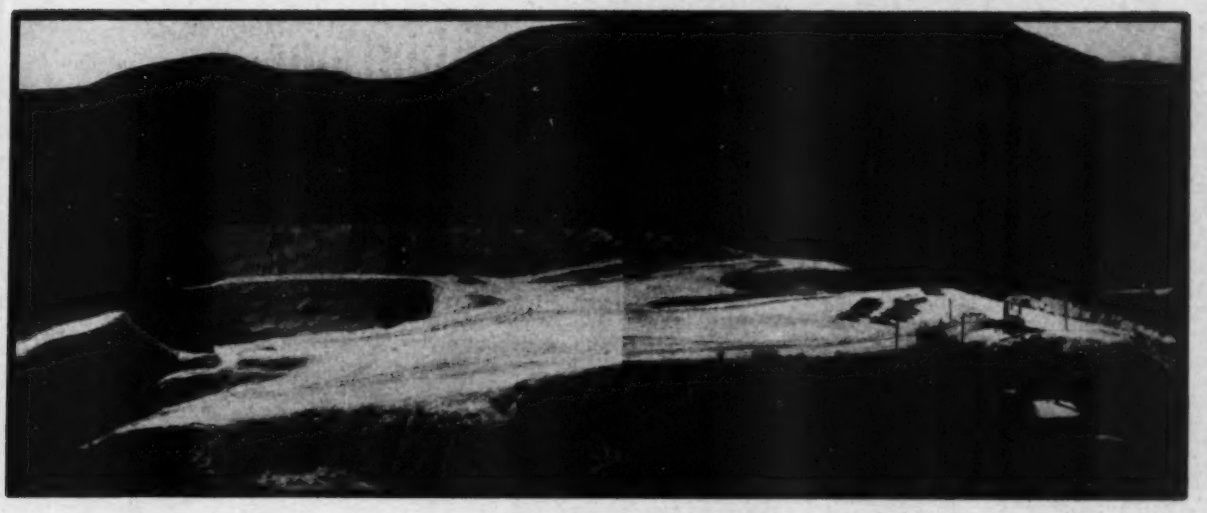
The nonadhering nature of diatomaceous silica combined with its absorptivity and enormous specific surface are useful in prevention of sticking troubles on the paper machine. One pound of diatomaceous silica may have from 25,000 to 200,000 square feet of surface. There is, therefore, covering power of a high magnitude available to surround particles in the stock. The absorptive character of the material is reflected in its high capacity to absorb oils. This capacity is much above that of other common paper fillers. The irregular particle shapes appear to have a bearing on the retention of diatomaceous silica in the sheet. Above normal retention is experienced in comparison with other pigments and fillers under equivalent conditions. In some instances the coating and absorptive properties combine to improve retention of other ingredients in the furnish. Because of the chemical inertness, diatomaceous silica does not interfere with sizing or coloring operations.

Diatomaceous silica does not cake up or shrink on drying. This characteristic, in addition to the lower moisture content of the web coming from the presses, serves to speed up the drying operation. This is particularly the case in the production of heavy sheets from slow stocks where there is danger of formation of an outer skin of high density and low capillarity. Diatomaceous silica maintains a path for the water to penetrate through such films. It also serves to reduce the possibility of their formation because of more rapid transfer of moisture from the inner strata to the surface.

In the finished paper or board, the bulking due to the low density of diatomaceous silica is most pronounced. Higher caliper sheets per unit weight are obtained. The physical properties, such as mullen and tensile are not appreciably altered at low diatomaceous silica content but strength values generally may be expected to be lowered as the percentage is increased. It would not be expected to be otherwise since this filler does not have any binding qualities, but on the contrary, is nonadhering. It follows also that diatomaceous silica papers have lower stiffness.



*Part of the mills and quarries at Johns-Manville's Celite deposit at Lompoc, Calif.*



*Mines can be beautiful. A view of the Johns-Manville diatomite mines at Lompoc, in the California foothills.*

In some instances improvements in physical properties of the sheet have been reported. These are more likely to be secondary effects due to improved formation, or elimination of crushing at the couches or press.

The surface friction of a diatomaceous silica paper is usually higher, so that slippage between sheets, or in feeding to printing presses, is reduced. Ink receptivity is more rapid because of the high absorptivity of diatomaceous silica fillers.

Mineral fillers generally may be expected to have an abrasive effect. In the case of diatomaceous silica this effect is not usually noticeable or of a magnitude sufficient to alter the average life of machine clothing. When employed in high percentages as a filler, it is sometimes desirable to apply corrective measures to counteract abrasiveness in converting equipment.

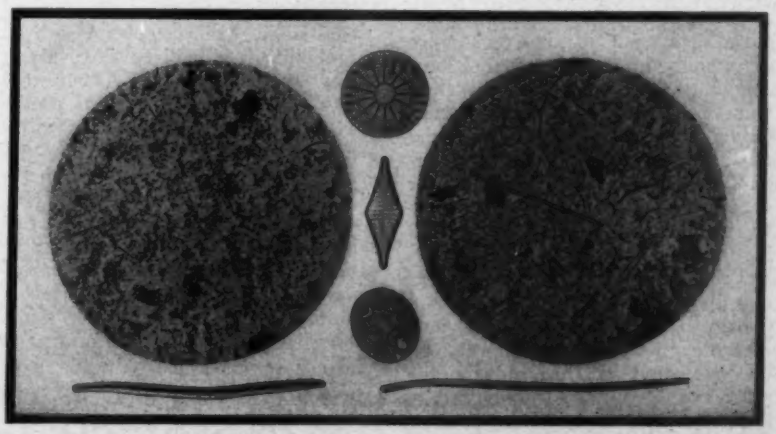
Some types of modified diatomaceous silicas have high brightness. These types find application as brightening pigments themselves and also as extenders for other fillers commonly employed to improve opacity.

### Applications in Papermaking

One of the earlier and best known uses of diatomaceous silica in papermaking is for pitch control. In this application the porous, absorbent, minute particles of diatomaceous silica added when the pitch particles are small, absorb or coat the pitch, overcoming its stickiness and preventing the formation of troublesome large pitch lumps. A very small percentage of diatomaceous silica is needed to accomplish this, usually the same weight as the pitch content. The retention is high, hence most of the diatomaceous silica and pitch go into the sheet instead of building up in the white water, making this method of pitch control very effective and economical.

Another usage based on the same principles and one which has become extremely important lately due to the pulp and waste paper shortage, is the use of diatomaceous silica to make asphalt laminated scrap available as usable fibre. Here again the application depends upon the coating of the asphalt (or other laminants) with diatomaceous silica. The laminated scrap in the form of clippings, trimmings, or waste paper, is processed in a regular beater using water heated sufficiently to facilitate fiberization (usually between 140 Fahr. and 200 Fahr.). Preferably the scrap should be preshredded or otherwise broken up into small pieces. The diatomaceous silica is added intermittently while the scrap is being furnished using a weight of diatomaceous silica equivalent to the weight of the asphalt or other laminant in the beater load. Under the softening effect of the hot water and the beating action, the scrap is disintegrated and the intermittently dispersed diatomaceous silica coats all particles of exposed asphalt. After mixing with regular non-asphalt fiber, the stock is handled as usual through the jordans and on to the cylinder machine. The asphalt is still present in the sheet and will show up as spots of varying size in the final product. Since these particles are coated, however, sticking to the machine parts or felts is avoided. The size of the individual asphalt specks in the final board is dependent entirely upon well known processing variables, including temperature of the water in the beater, the length of beating cycle, the amount of jordaning and screening.

Another advantageous use of diatomaceous silica which has been gaining popularity in the last few years is its use as a bulking agent in chip board, liner board and other cylinder machine products. Here a very low percentage, approximately 3 per cent to 4 per cent on the furnish, will often show marked



*The large circles shown above are photomicrographs of two commercial grades of diatomaceous silica. Celite No. 321 (on the left) has exceptional brightness characteristics. Some individual diatoms at high magnification also are shown.*

# Incentives and Salary Determinations for Salaried Personnel

**F. A. MATTKA, Director**
**Research and Development Bureau**
**The Bedaux Company, Inc.**

▸▸▸ ALL EMPLOYERS whether manufacturing paper, textile, or steel products have essentially the same employee compensation problems. They have an obligation to perform in maintaining standards of fairness to all people either directly or indirectly affected by the general level of wages or salaries and the comparative earnings of employees within such schedules. Primarily, there are two considerations which should prevail in the establishment of the company's compensation policies. First, a basic rate of compensation must be established which is equitably in agreement with the general nature of the duties performed by the employee. Second, a means of recognizing contributions of the employee above such a generally established base is highly desirable. At present, of course, all of this must be done within the limits as established by federal regulations as they relate to employee compensation policies. Such rules are indicative of national trend and they have emphasized the fact that employers with fairly established compensation policies have had less difficulty in meeting the requirements of emergency regulations. Other employers have hastened to put their houses in order, not only to satisfy present conditions but also to prepare a foundation policy for future peacetime operations.

Over a period of many years, much has been done by both management and labor directed toward the construction and acceptance of determinations related to rates of pay for hourly paid factory workers. The same is not true for salaried personnel. The study of rates of pay and production output for such personnel is comparatively new, but considerable attention is currently being directed toward the salary problem.

Under the broad heading of salaried personnel will be found subdivisions, such as: office or mill employees with routine clerical duties; production supervisors ranging in title from minor foremen to mill superintendents; office supervisors; technical staff personnel (engineers and chemists in research and development work); sales personnel; and administrative executives. Other classifications may be constructed from the standpoint of whether weekly, semi-monthly, or monthly salaries are paid or whether employees are or are not exempt from overtime payment under the Wage and Hour Law.

Salary standardization for employees engaged in routine functions follows the same patterns of job evaluation based upon point rating and job attribute comparisons that have been used with great success in determining hourly rates of pay for mill workers. Likewise, production incentive principles, which recently have been clearly defined by various War Labor Board officials, apply not only to direct productive work but also to salaried employees performing standardized routine duties. As we climb the salary range ladder we find that real solutions to both salary and incentive considerations become more difficult.

The incentive problem will be given preference in treatment because of being currently widely publicized.

It is fortunate, indeed, that an incentive to human beings, meaning an urge, encouragement or stimulus, can be many things besides money. There is the pride of accomplishment, the sense of responsibility and duty, the satisfaction of helping a good cause—all these often can mean much more than money. This works both ways, too, for the incentive can also be negative, through fear of blame or pun-

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**Diatomaceous Silica . . .**

effects on machine operation and on the final product. Added at the breaker beater with the furnish the diatomaceous silica dispersed in the sheet, while effecting improved formation, simultaneously facilitates the removal of water, thereby lowering the load on the driers by delivering a sheet of lower water content. This produces either faster machine operation, or steam saving, or both, depending on the objective. Final board surface is usually smoother and has good surface qualities for printing or adhesives. Increases of 10 per cent in bulk and the same percentage in machine speed have been accomplished in certain mills on certain boards.

The same improved bulk can be accomplished with diatomaceous silica in virgin pulp sheets made on fourdrinier machines. In this application from 3 per cent to 10 per cent of Celite on the pulp dry weight is the usual amount used. The final effect on bulk is dependent upon whether or not other fillers are also in the sheet and many other factors, including machine speed, weight of sheet, and retention. An increase of 10 per cent in bulk on sulphite bonds and mimeos has been accomplished. Such diverse furnishes as ground wood on one hand and bleached soda on the other have been appreciably bulked by diatomaceaus silica. The intrinsic bulking capacity is an outstanding characteristic of diatomaceous silica. This is experienced particularly in mimeo sheets where improved ink absorption, both amount and speed have been noted.

The different available grades of diatomaceous silica allow a wide choice as regards brightness. The choice ranges from grades of around 65 GE-Institute brightness to special processed grades up to 95. Alone, these very high brightness grades can improve the brightness of some sheets. Used with $TiO_2$ in recommended ratios the pigment cost is lowered for a given brightness. The more $TiO_2$ required for a specific job the higher is the potential saving in the total pigment cost. To obtain high opacity remarkably fine results are being achieved with mixtures of $TiO_2$ and lower brightness grades of diatomaceous silica. An example of such an application is airmail envelope paper.

In suggesting that diatomaceous silica can impart valuable characteristics to paper or in the process of manufacture, we are referring to commercially standardized grades such as Celite 340, Celite 321 and Celite 305.

It can be seen from the above that there is a wide application of diatomaceous silica in paper, both in improved processing and in the adjustment of sheet properties. The available standardized grades are fully described in current technical data sheets. It is suggested that paper men consider the qualities which diatomaceous silica has and judge whether or not at this time these materials can help them in their daily problems.

ishment, or self-remorse. For present purposes, however, consider only positive, constructive incentives, in the belief that if the encouragement is sound and substantial, most men—be they executives, supervisors or workers—will respond favorably.

Incentive pay, whether to supervisors, or executives, often is associated with the term "bonus." Bonus payments *may* be the result of an incentive plan; but it must be strongly emphasized that not all bonuses are a real incentive. It is an axiom derived from actual experience that the effectiveness of any incentive is closely related to the directness of the relationship between performance and reward. This means that, everything else being equal, individual incentives based upon a correct measure of individual performance are most effective. When this is done, the beneficiary feels and knows that his reward is legitimate and earned; he knows that improved performance on *his* part means greater reward; the relationship is direct and positive and, therefore, effective. In contrast with this, large group bonuses, profit-sharing, and many stock or dividend bonuses have only a very remote incentive value, since the payments seldom have any relationship to the performance of the individual recipients. As Christmas gifts, they are fine, and they no doubt contribute to good will. But as an effective way to promote better performance, their real value is highly questionable, especially in the larger organizations.

Few people love money for its own sake. It is only because money means more and better things that it is attractive to most people and, therefore, constitutes a strong and nearly universal means of incentive. That appetite for money, however, varies greatly from one individual to another and from one set of circumstances to another. A relatively small amount of money means a great deal to a man whose income just permits the essentials of life for himself and his family. Those in the higher brackets, who already have enough to permit a life of ease and comfort, would have much smaller money appetites were it not for the power and influence that money can give.

▶▶▶ Under our present war conditions, with the high tax rates and the lack of many prewar comforts and luxuries, the value of money as an incentive has been considerably reduced in the upper income brackets. Going down the income scale, however, a much less changed situation exists. Persons of more moderate income, such as supervisors, still retain a large proportion of their income and still have fairly wide opportunities to put it to good use. They might not be able right now to buy new tires and to drive 5,000 miles during their summer vacations, but they have plenty of other opportunities left to buy food, clothing, and recreation, if they have the money.

This is even truer with the great mass of industrial workers. With them the value of money as an incentive is now just as great, if not greater, than ever, if for no other reason than that most of the essential things of life are still purchasable and cost more. The mere fact that some groups have sacrificed essential production and services to force wage increases and that other groups are threatening to do the same, demonstrates that patriotism and social responsibility do not always come first.

So the fact remains that a money incentive is still attractive to most men. And at the moment incentive plans have the added significance that they are one of the few legitimate ways left open by the wage stabilization program to provide substantially increased compensation. The question now is how incentives can be applied to salaried personnel in a satisfactory and beneficial manner. If a fair relationship between performance and reward cannot be established and maintained, the incentive loses its effectiveness and may, in fact, lead to difficulties. It may be useful as a substitute for a salary or wage increase, or as a gift, but it is not a desirable form of incentive.

Any consideration of money incentives should, therefore, be preceded by a careful analysis of the responsibilities and duties involved. Only to the extent that an employee can contribute, should a money reward be provided. If in a bonus formula his direct responsibilities are mixed with those of others or with uncontrollable factors, the value of the bonus as an effective incentive will be reduced in proportion to the importance of the other factors. It will be altogether nullified if the results of the individual's own efforts and planning are so affected by matters over which he has no control that he cannot see or feel any relationship between performance and reward.

The possibility of identifying and measuring controllable factors of responsibility is, therefore, a basic consideration in deciding whether a money incentive is advisable. This, as will be seen, is usually a fairly simple matter for salaried employees with precise and limited responsibilities, such as is the case with most clerical workers, but it becomes more difficult with supervisors, and rather involved when it comes to executives and technical staff personnel.

▶▶▶ In most cases, supervisors' immediate duties are fairly well defined. There is a schedule to be met, standard costs to approach, definite quality requirements, good labor relations to maintain, etc. The essential factors are volume, costs, quality, productivity of labor, and productive use of materials, plant and equipment. The calibre of labor relations will generally be reflected in the volume of production and in costs and productivity. If the workers themselves receive a fair incentive wage, so much the better, since the urge for better results will then come from them as well as from the supervisors and so make for a spirit of genuine co-operation.

The term supervisors applies to both mill and office supervision. Responsibilities of the office manager, in directing the routine activities of the employees under his control, are essentially the same as those of production superintendents. Office schedules, productivity, and expense budgets are controllable.

The supervisor's cost factor should include all items of costs which can be measured and which really come under his control and influence. This means the setting up of accurate cost standards established independently of past performance—for past performance may be anything from poor to exceptionally good. Budgetary control as a basis of incentive pay for supervisors is good only insofar as these conditions of control and accuracy are respected. A budget which takes in all items of cost, including many items entirely beyond the control or influence of the supervisor, on the theory that supervisors are executives and executives should have responsibility and credit for the final results, is decidedly not a desirable base for incentive pay. One supervisor among 500 in a company employing 20,000 workers cannot be expected to be stimulated to do his best if his reward is largely determined by the performance—good, bad, or indifferent—of the 499 other supervisors. The company's over-all results may be reflected in a Christmas bonus or a general profit-sharing plan, but these are creators of good will rather than effective money incentive devices. The major consideration in a money incentive should be the work of the particular supervisor, as reflected by the results of his own group or department, insofar as he can influence these results.

▶▶▶ Several hundred American manufacturing plants have used an incentive bonus formula for supervisors in which the bonus is determined by the average index of productivity of the group

supervised modified by the ratio of standard to actual costs. For example, a group productivity of 130 per cent and a cost ratio of 90 per cent gives a 117 per cent rating to the supervisor, which means a 17 per cent bonus in addition to his regular salary. Both the productivity factor and the cost ratio take in supervision, direct and indirect labor, and assumes fair standards for all unmeasured items—i.e., items of production and of costs for which standards have not been established—are figured at their actual time or cost for both actual and standard values. Thus, the more unmeasured work, the closer productivity will be brought to 100 per cent, and the more items of unmeasured costs, the closer the cost ratio will be brought to 1. The incentive is therefore designed:

1) To promote high labor productivity.
2) To obtain minimum costs.
3) To secure the greatest possible measured coverage.

This practice has been occasionally criticized because of the strong inducement toward high labor productivity, and particularly when labor was not paid on an incentive basis and so got no direct benefit from increased productivity.

Under present conditions, however, one would hardly fear abuse of workers on the part of supervisors—the fear, if any, might be the other way. Some managements, however, prefer something like this: A predetermined percentage bonus for standard cost performances and 100 per cent measured coverage. The assumption is that good productivity performance will be reflected in the cost factor. Thus, a supervisor's bonus of, say, 35 per cent will be paid when actual costs are equal to standard costs and the measured coverage is 100 per cent. The scale of bonuses between 0 and 35 per cent can be arbitrary, say, 1 point below 35 for each 1 per cent above standard cost. This means a 25 per cent bonus when costs are 10 per cent above standard. Then the coverage factor is applied so that these figures are maintained if the coverage is 100 per cent, but are proportionately reduced if the coverage is less than 100 per cent. In the above case of 25 per cent bonus for 10 per cent above standard costs, 80 per cent coverage would mean a final bonus of 20 per cent.

In the determination of those factors of cost and production over which a supervisor has control or influence, it often happens that the responsibility, while definite, is only partial. That is, the supervisor can clearly exert a favorable or unfavorable influence on the result, but only to a limited extent. In such cases, the corresponding cost factor can be modified by a coefficient —say, ½ or ¾ or ¼—corresponding to the degree of responsibility. This means that those factors over which the supervisor has full control are taken at their full value, while those over which he has only partial control are taken at a correspondingly reduced value. This practice, however, should not be carried too far, first, because it becomes unnecessarily complex and, second, because a degree of judgment is of necessity involved in the determination of these coefficients, and this tends to reduce the accuracy of the final figure. In principle, it is better to consider only the most important cost of production items over which the supervisor has a definite and major influence rather than to try to consider all the factors over which he has some influence.

All these methods and formulae can be modified or amplified to meet special circumstances. If, for example, production needs are substantially above normal capacity, a production factor can be introduced in terms of standard man-hours. A production volume above normal capacity would then increase the bonus figure in a direct or conventional relation. If this necessitates the hiring of many inexperienced workers, resulting in low productivity and high costs despite good supervision, proper allowances can be made on the basis of a reasonable training schedule so that an effective and substantial incentive is maintained under any and all conditions. As a matter of fact, a good, well-administered incentive to supervision is even more valuable under these abnormal conditions, when the tendency is to accept poor performance as inevitable.

▶▶▶ Actual experience shows that a money incentive to supervisors—if soundly conceived and properly applied—is very effective. Perhaps more than any other group, industrial supervisors need all possible stimuli and encouragement, not only because of economic reasons but also because their former freedom of action has been greatly limited in recent years. In not a few cases the foremen are now in the uncomfortable position of having real responsibility but little or no real authority. This situation of "damned if you do" and "damned if you don't" is not exactly creative of good morale; therefore, everything possible, including money incentive, should be done to make the supervisors directly interested in the results of their own groups and to give tangible recognition to good performance under those difficult conditions. The effectiveness of incentives for supervisors is greatly enhanced when they are supported by proper incentive pay to direct and indirect workers. When this is the case there is a close community of interest, which results in a common desire to do well and makes for better results and more harmonious relations.

Whatever the incentive plan may be, it is essential that it be clearly understood by all concerned. This applies both to the general principles and to the details of their application to each individual supervisor or group. The supervisor should be able, from existing operating and cost records, to determine readily the amount he is to receive.

▶▶▶ So much for the supervisors. Now, how about the executives?

The line of demarcation between supervisory and executive functions is not always clear. Generally speaking, executive functions imply policy-making or interpretation within more or less wide limits. But a plant superintendent may be just a supervisor in one company while the superintendent of another company has real executive responsibilities.

There is also a distinction between top and second line executives. Both must think of the present and of the future but the former are more concerned with the long-range results and viewpoint while the latter are more concerned with immediate results.

It seems obvious that no incentive plan can be devised that would be equally satisfactory for all executive groups. Many lesser executives can be treated in the way already outlined for supervisors. In many other cases, however, it is impossible to define the relationship between the executive's individual performance and the results produced. Those executives may be rewarded through a plan dependent on the profits or sales of the company or of their particular division of the company.

This is a common procedure with incentives for top executives. Taxes and other circumstances have reduced the incentive value of money to such individuals. There is little doubt, however, that substantial money rewards for good top executive performance are desirable and effective. The difficulty is to establish a method where ability, vision and accomplishments prevail rather than good fortune and favorable outside circumstances.

Past and existing methods of incentives for executives, based on the volume of business or profits or on variations in business or profits from year to year have proved to be a good stimulus under certain conditions and no stimulus at all under other condi-

tions. This is particularly true when the efforts and abilities of the executives are nullified by unforeseen and uncontrollable circumstances. Those executives who in the 20's received high bonuses based on profits, while attending to a great part of their business on the golf course, and who received no bonus in the 30's, while working twelve or sixteen hours a day and staying awake nights trying to figure out how to keep the business afloat, certainly were not influenced or stimulated to any great extent by their money bonuses. They were stimulated by their sense of responsibility to their associates, workers, stockholders, and the country at large. They probably were a little sorry for their previous complacency and their optimistic belief that the boom was a permanent thing. It is even possible that those large bonuses of the late 20's had contributed to their complacency and overoptimism. At any rate, it is certain that their companies no longer thought so well of their bonus plans for executives since the great majority that had them in the 20's dropped them in the early 30's, just when the stimulus was most needed.

With the exception of those companies on the ragged edge, the major concern of the top executive should be not so much what this year will show as what the next several years will bring. His point of view should cover plans for new and improved products and their manufacture and marketing over a period of years. Besides, more and more executives are deeply conscious of social responsibilities which have often only an indirect —if vital—relationship to their own business. For these men—if a money incentive is to supplement the directors' appreciation of their salary value and the more abstract, but nevertheless powerful, incentives of honest pride, self-respect and satisfaction—the money incentive should be related not to any one year's results but to an accumulation over a period of years.

▶▶▶ Few executives would deliberately neglect far-reaching activities or emphasize temporary benefits just to build up a bigger showing for themselves that particular year. Still, executives are human, and they may be unconsciously influenced in the wrong direction if their incentive is in the wrong direction. There have been cases of neglected plant maintenance and equipment, short-sighted sales policies, poor personnel planning, false economies in research and engineering, and abusive labor practices, whose effects were not immediately apparent but which later reacted unfavorably on the company's welfare. So if there must be an incentive for executives, the long-range point of view should be intensified through a long-range form of incentive.

▶▶▶ One way to do this is to accumulate the yearly figures used as incentive base for a number of years and then add the latest and subtract the oldest year each subsequent year. When this is done, since executive bonuses may represent substantial figures, proper reserves should be set up so that the plan can be carried on through bad as well as good years.

In many cases executive incentives have been based on profits before taxes, since executive control over taxes is very remote. A substantial stock ownership will bring its own reward, unless the tax rate is extreme. A direct scale of bonuses in proportion to gross profits may be provided in addition to stock ownership. Executive bonuses may also be related to variations in the volume of sales or to the sales increase over a previous period. Or, the factors of both profits and volume of sales can be combined. The indefiniteness of the relationship of dividends to business performance in recent years seems to indicate that straight cash bonuses related to profits before taxes or to sales, or both, are now a better form of incentive than stock ownership plans.

Whether for executives, for supervisors or for lower salaried employees, we shall do well to remember that money incentives can be only a helpful tool and not a substitute for good management. Neither is any incentive better than none; it must be sound and legitimate. The essential fact to remember is that any incentive plan must provide a close relationship between performance and reward. What the fair-minded employees want is that such rewards are proportionate to their respective contributions.

Much of the presentation concerning incentives parallels the topic of salary standardization. The standardization procedure becomes considerably more difficult and the results more uncertain as the duties of the salaried employee become more indefinite and less routine. Thus, the use of "point rating" methods to determine the comparative value of the various salaried positions is definitely applicable to those positions involving rather routine assignments. "Point rating" satisfies only the first step of the standardization program. After determination of the relative value of the various positions, it becomes essential to construct a salary scale in terms of dollars. This salary scale should result from a survey of prevailing rates of compensation for employees doing like work within the area. Reasons why it is not equitable to pay less are quite obvious, but it is also doubtful, whether in fairness to both the employer and the employee, more than the prevailing level of salaries should be paid. Doing so creates in the employee a false sense of value, not only with his present employer but also when a change in employment becomes necessary. It is beneficial in our social, economic, and political structure to have employees compete on a basis of equality for more desirable positions.

Salary determinations for those positions in which the employee's duties and functions are quite indefinite require a different approach. This is substantiated by the evidence that several large companies, after years of study devoted to the salary problem, have not applied conventional "point rating" methods to salaries beyond the $3,000 to $5,000 a year range.

Position rating can be defended as being within approximate limits of accuracy only when position requirements or content can also be approximately defined. When such content becomes indefinite, as quite often is the case with technical personnel, minor and top executives, it is logical to assume that the employee creates the contents of his position rather than having the position itself determine the salary that should be paid. In other words, a not too well established dividing line exists somewhere within the salaried organization below which point positions can be rated but above which not only the position but also the qualifications of the individual employee holding such a position must be considered. Salary standardization for such positions then becomes a combination of two considerations: namely, position rating to determine basic comparative values plus employee merit rating within a pre-established money range.

▶▶▶ All of the foregoing is directed toward the sound principle that all industries and individual organizations should have well-defined and effective compensation plans for both hourly paid and salaried employees.

Comparative values of salaried positions and corresponding "going" basic rates should be paid. To foster individual application, initiative, and ingenuity, the employee also requires personal consideration. This may take the form of additional incentive compensation based upon either measured performance or merit-rating increases. Preference should be given, wherever possible, to the procedure under which it is possible for the employee to predetermine the return to him in relation to effective contribution.

*LEFT—Plant physician examining new employee. RIGHT—Starters clearly marked, danger signs at hand.*

# THE NEW EMPLOYEE

**THOMAS FURNESS, Safety Director**
**The Champion Paper and Fibre Company (Canton Div.)**

▶▶▶ PREWAR STANDARDS have been altered in many respects because of the manpower shortage. For this reason, the induction of employees should be planned with great care in order that each available employee may be placed in a job for which he is best suited.

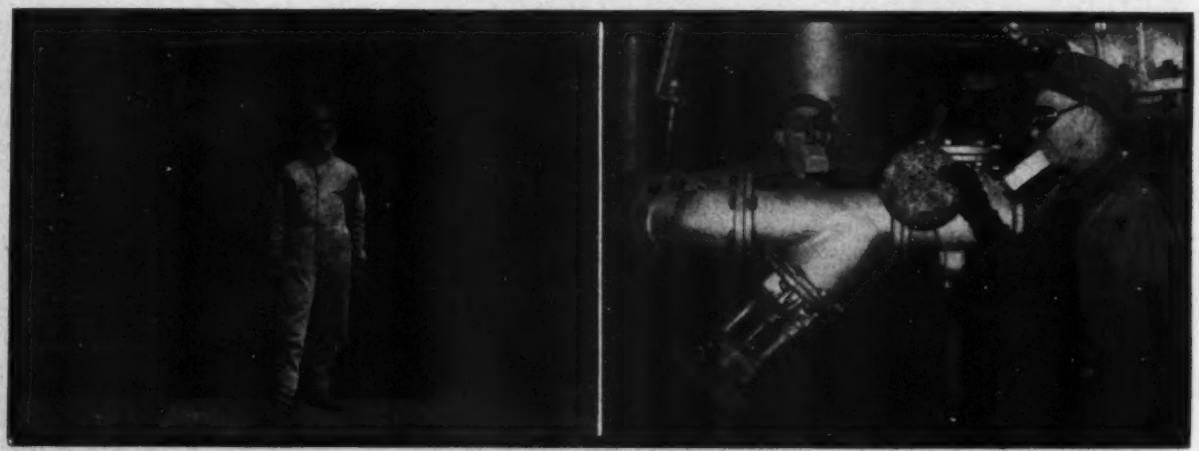
It is established practice at the Champion plant to examine each prospective employee to determine whether or not—in the opinion of the plant physician—the man is physically fit to perform the work for which he has been selected. This examination also reveals any physical weakness that would be aggravated by the work or that would endanger his fellow employees.

Since the examining physician has the opportunity to make the first impression, he should not fail to instruct the worker in safe personal habits, and the importance of getting first-aid treatment for minor injuries.

The physician sends a copy of his examination to the superintendent of the department in which the employee is to work, giving comments of the employee's physical condition and mentioning any minor defects that should be cleared up promptly.

At the safety department the new employee receives instructions in safe practice and is given an outline of the company's general safety program. Every effort is made to impress upon him the fact that his safety comes first; that his future depends more upon his being considered a safe man than upon his ability to do any job. He is instructed in the use of safety clothing, gogg'es, respirators, and other safety equipment, also, how and where he can obtain this equipment. He is given a safety code book and signs a receipt for it, certifying that he has received the safety code and that he has been instructed to abide by its teaching as long as he is an employee of the company. An effort is made to cause the employee to realize that the code must be followed, but that it does not cover all of the things he should do to prevent injury to himself or others—in short, he must learn that he is responsible for his own safety.

After a period of two weeks, the employee returns to the safety department for questioning on his safety code. The most should be made of this opportunity to further his education in safety, and the safety department should keep in touch with the new employee until he is well established in his work.



*LEFT—Dustproof coveralls provided for working in lime and dust. RIGHT—Blanking off acid line.*

A method of setting up a safety code for departmental rules can be compiled through "Job Instructor Training," which cultivates an analytical approach to any type of work where safety is the major objective. In the job breakdown sheet (illustrated) the hazards are recorded by the men doing the job and can be collected and set up as a code for safety. These rules, compiled by the employees, will be followed more readily than those dictated by management.

Hazards in the pulp and paper industry are as numerous as all industrial hazards because of the diversification of processes, which may be divided as follows:

1) Mechanical
2) Chemical
3) Electrical
4) Mental and Psychological

### Mechanical Hazards

Positive mechanical means of elimination of machine hazards is a problem of management and should be applied to the maximum extent because it is reasonably possible every uncontrolled hazard will at some time produce a serious injury no matter how safe an attitude the operator may have. The proportion of permanent disabilities from injuries resulting from machine operation is high in severity.

Inspection of equipment such as hoists, elevators, and cranes involve the duties of supervision and maintenance so that hazards may be observed and corrected while machines are operating.

The handling of wood produces the highest frequency of injuries due to the building of unsafe staging and runways, the condition and use of picks, unsafe piling, lifting improperly, and lack of wearing safety toe shoes. Also, weather conditions call for suitable protective clothing. Alert supervision and training is essential to keep accidents at a minimum in this type of work.

Chipper operators are required to wear safety toe shoes, goggles to protect eyes from flying splinters. The knowledge of starting and stopping equipment and the use of danger signs while working on machine, should be the duties of the crew leader, also the checking and inspection of the bolts and nuts used in fastening chipper knives.

Hazardous conditions develop while working in and around pressure apparatus. When entering any pressure units for inspection or repairs, pipe line must be blanked off—do not trust valves. All danger of gas should be cleared. This, in one measure, applies to tanks. A workman should never work alone while doing this type of work. A man should be placed at the entrance to be on hand if an emergency should arise. Consideration must be given as to the use of safety lines and belts, respirators and gloves, good light and ventilation.

The mechanical hazards on paper and board machines are numerous, the most serious being nip-injuries. All in-going nips are, as a rule, at the presses, felts, dryers, and calenders; the latter usually results in the most serious injuries.

Following are some types of mechanical hazards, reported from various mills in the paper industry:

*Type 1—Calenders:* Man moving broke from between two stacks of calenders. Broke entered the bottom nip of one calender, pulling man's arm into nip and severing his arm below the elbow.

*Type 2—Calenders:* Man cleaning the edge of a sharp calender doctor cut serious gash in hand.

*Type 3—Dryers:* Man trying to remove board paper from the last dryer with hands, instead of using a spear, was caught and killed between the two last dryers.

*Type 3—Dryers:* Man threading paper on dryer section had arm caught by the felt and hand and arm badly burned.

*Type 4—Presses:* Man worming a string on end of felt roll to spread felt was caught by felt and passed between felt and roll—was killed.

*Type 5—Fourdrinier:* Man handling table roll slipped and fell on oily floor, roll fracturing skull.

*Type 6—Screens:* Man cleaning screen with defective steam hose was badly scalded.

*(Concluded on page 1344)*

### Job Breakdown Sheet

Dept.—Cut and Prepare — Job—Big Crane
Unit of Instruction—Steps 1 to 8.

| Important steps in the job | "Key Points"—knacks, hazards, feel, timing, special information |
|---|---|
| 1—Turn switch on. | 1—Safety<br>(A) *Be sure all "Danger" signs have been removed by person who signed the card.*<br>2—Marked on box |
| 2—Get in carriage. | *1—Park crane where there is no danger of falling when getting in or out of carriage. Use ladder provided for this purpose.*<br>*2—Safety belt must be fastened at all times.* |
| 3—Long ropes on left. | 1—Front runs carriage to left<br>2—Back runs carriage to left |
| 4—Short ropes left front. | 1—Back runs crane forward on track<br>2—Front runs crane backward on track |
| 5—Long ropes left front. | 1—Front locks crane to track over cutter<br>2—Back unlocks |
| 6—Short ropes right front. | 1—Bottom lets down<br>2—Top raises |
| 7—Moving rolls. | 1—Proper hooks<br>2—Stockmen hook rolls second floor and basement<br>3—Beam for big cutter<br>4—Placing rolls<br>5—Safety<br>(A) *Be sure rolls are hooked in proper way before lifting.*<br>(B) *When hauling rolls near aisles, see that helper lets no one walk under crane.*<br>(C) *Avoid sudden stops when loaded. Do not reverse motor to stop crane.*<br>(D) *Always keep legs in clear (this applies to big crane only).*<br>(E) *Only authorized operator shall operate crane.* |
| 8—Loading cutter. | 1—Proper hooks<br>2—Rolls pointed out by man on floor<br>3—Place in back stand as operator wants them<br>4—Safety<br>(A) *Be sure that helper has hooks set right before lifting rolls.*<br>(B) *Shafters must be out of the way before rolls are picked up.*<br>(C) *Crane tracks must be locked to track over cutter before loading.* |

This Job Breakdown if Followed Will Enable Operator to Operate in a Safe Manner.

# Work Simplification *in the Paper Mill*

**L. E. RICHARDS, Industrial Engineer**
**Crane & Company, Inc.**

▸▸▸ WORK SIMPLIFICATION in any industry can be summed up as a tool, to be used by management, to promote a more efficient organization through the elimination of the waste of time, energy, and material. The principles involved in Work Simplification are not new, but have been in wide use in many progressive industries for a number of years. Much of the wide use of Work Simplification in many of the leading industries can be attributed to Allen H. Mogensen, Industrial Consultant, who had the foresight to see that labor in general disliked and distrusted the efficiency expert, could be expected to build up resentment towards such experts, place every possible obstacle in the experts' way, and thus defeat any program of efficiency set up by these individuals.

Combining sound economic principles, a knowledge that waste reduction benefits labor as well as capital, and an instinct that the majority of people take pride in their ideas, Mogensen went to work with his God-given talent to sell his idea.

The principles and techniques that have resulted from this germ of an idea have been applied to a wide variety of industries. They can be used in farming, distribution, transportation, schools, homes, banks and industry. In fact, they can be used in any place where useful physical activity takes place. There is absolutely no industry on the face of this earth, large or small, that cannot use, with success, the principles of Work Simplification, and the return on this effort will be in direct proportion to the amount of time and the kind of effort expended.

The use of Work Simplification and its principles can therefore be applied to the operations and processes of the paper mill. All concepts for the most part will remain the same with a slight variation to make them applicable to the paper industry.

Before embarking on a waste reduction program, certain factors must be considered carefully. The most important of these factors is that the management must be convinced of the need of such a program in order that it will contribute its wholehearted support. Without such support, this or any other program is doomed to failure. Many of the so-called "secret processes," methods and material will be subjected to rigid scrutiny, and of necessity may be changed, relocated, or abandoned. Since these are indications of progress, and management can stand in the way of progress, its full backing of the program is essential.

The accomplishment of the program is fulfilled by training employees (regardless of rank or position) in the principles and techniques so that they in turn may become their own efficiency experts. This naturally leads into the choosing of a leader to conduct the training program. He must have a knowledge of mill operations, and preferably have an engineering background. He must be able to get along well with people, have a sense of humor, and have definite characteristics of leadership. Because he is to sell a program to executives and operators, salesmanship is desirable. He must be able to distinguish between good and poor ideas, but be able to listen to both kinds. He must be a diplomat when it comes to the non-acceptance of ideas for they must be turned down in such a way that no harmful effect will result either to the program or to the worker. This sounds like a large order but the man to be chosen must have these characteristics or the ability to develop them.

The subject material to be used in this waste reduction program is obtainable in several different ways. One is to call in one of the consultants in this line of endeavor, who starts the program by giving it to a group of executives, and then the leader, having completed the course, is able to carry it to the next group. Some universities and consultants offer this as a summer course which, when taken by the leader, supplies him with sufficient knowledge and material so that he may set up his program in the plant.

In order to assure the program of success, it should follow a definite pattern through the plant. The program is first given to executives, and works down through the ranks to operators. It is easy to see the desirability of proceeding in this manner, because as the course progresses, the man above can encourage the lower bracket employee.

When the program has progressed to the level of key operators, a plan must be provided whereby an individual will be rewarded in proportion to the excellence of any improvement that is suggested. Such a suggestion plan is to be in vogue long after the course in work simplification is completed; therefore, it should be built so that it will endure. Such a plan does not need to be elaborate, but it must be set up fairly and each idea rewarded. A booklet should be provided so that each employee can understand the plan. The present-day trend in suggestion booklets is to have them elaborately and artistically cartooned which may have some value in the stimulation of ideas. However, it would appear that it would be more effective from a long range point of view to keep the booklet simple and dignified. This will lend dignity to the system, and cater to the more serious minded individual. It is from this source that the more sensible and valuable ideas will come. The plan should be capably maintained and administered.

Each session given to employees lasts about one and one-half hours and

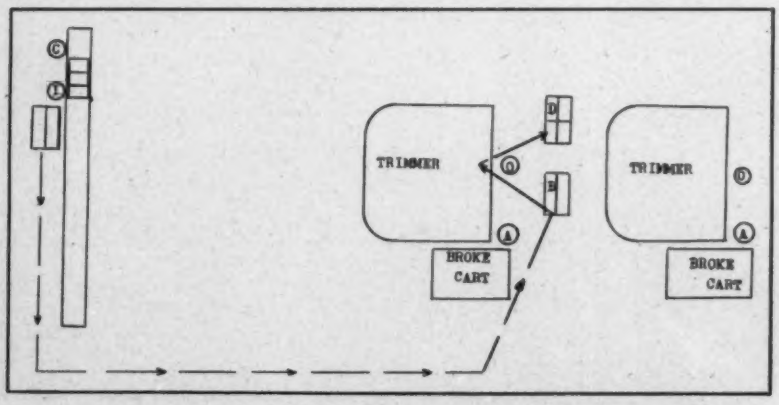



*Fig. 1—Old method of trimming. Note flow of material. (A) Basket for waste, (B) Paper to be trimmed. (C) Counter, (D) Trimmed paper, (I) Inspector, (O) Operator.*

consists of a lecture, discussion, and motion pictures. As soon as it is feasible, pictures from the plant itself should be taken and incorporated into the course. In order that a more complete concept of Work Simplification can be obtained, and its effect on the personnel of a plant can be noted, each session will be briefly outlined.

**Session No. 1 — Progress and People** deals with economic aspects of business and justifies the starting of a waste reduction program. It proves from an economic viewpoint that the lower the price of a good product, the more it falls within the purchasing power of a larger number of individuals; and in consequence, the greater will be the demand for the goods, and the more stable will become the jobs of the people producing these goods.

Using the progress of the company as a proof of the above is always desirable in the first session for it very effectively makes use of an example which is familiar to the individuals taking part in the program.

Develop in this session the engineers' approach to a problem and show the group that all the engineer does is to find out what is wrong, and then make corrections. Emphasize that anyone can study his own job from this point of view, thus making himself more effective in his work.

Session No. 1 must be prepared with great care, for all future sessions depend on the interest stimulated. Lay stress on the fact that the program is to make a better product at a lower cost through the elimination of the waste of time, energy, and material.

**Session No. 2 — Progress and Employment** explains why there is progress and what effect it has upon the employment of the individual worker. Progress for the most part can be attributed to the occasional individual who believes in himself sufficiently to make a better product, and has the fortitude to strive towards his objective until he succeeds. There are innumerable examples of such individuals that can be utilized to prove the above statements.

There is progress in industry because there is competition, and this force will either put people to work or put them out of work. If competition is eliminated, it would make an individual take it easy rather than make him strive to produce the best possible result.

High costs are caused by the waste of time, energy and materials, and good work results only when these three factors are kept at a minimum. All such waste represents a shrinking of the consumer's dollar, makes for less purchasing power, and consequently, less employment.

**Session No. 3—Cleanliness and Orderliness** is the first step in any waste production program. No matter how clean and orderly a plant may be, there is always room for improvement. Partly by a clean and orderly program the objective of a better product at a lower cost is obtained. Anyone familiar with the paper industry can easily see the effect that cleanliness can have upon the making of a better product. From the raw materials to the finished product in the paper mill, much expended energy contributed by humans and machines is utilized for the purpose of producing a clean sheet of paper.

Paper spoiled by dirt means paper that can not be sold, and its cost must be absorbed in the costs of the salable paper. Thus we have an increase in selling price, and the possible loss of customers.

Make it a rule of the plant that a place is in order when there are no unnecessary things about, and all necessary things are in their proper places.

**Session No. 4—Process Charts** form the first of the engineering tools to be used by the personnel taking the course. It is a well known fact that work is not always done the right way. Workers may have been taught the wrong way, or without thought, have developed poor habits of doing jobs.

It should be realized that competition may well make it a matter of life and death to a concern to find the one best way of doing every job. Doing a job in any other way than the one best way means waste, and this, in turn, steals profits and endangers wages.

There are always several possible ways of doing a job. In order to find the right way of doing a job, some measurement must be used so that the best way can be selected. The form of measurement used is the process chart.

In making a process chart, the following symbols are used:

- O Operation
- o Transportation
- □ Inspection
- △ Storage

Process charts furnish an easy way to study any job, are not hard to make, and place all the various component parts of an operation on a sheet of paper from which all information needed to improve the job can be obtained. As a means of creating interest and understanding the group prepares a chart based on some job that occurs frequently around the house. Such things as washing the car, fixing the furnace, provide good material for this assignment. The better charts, or the ones which contain the most amusement, are frequently printed and given to the group to become a permanent part of their report. An example of a chart appears later.

**Session No. 5 — Making the Process Chart.** The results of having made one of these charts are reviewed with the class. By having the group make a home chart, the following is accomplished: Allows the group to follow an operation which is very familiar, indicates some of the pitfalls that arise in making a chart, and makes them realize the details; such as, transportation, operations, etc., that are required to do some of the home's simple tasks. It will, for the most part, amaze those who have never made a chart.

There are several rules to be followed:

1) Don't sit at a desk and make a process chart, because if you do, you will miss some of the details.

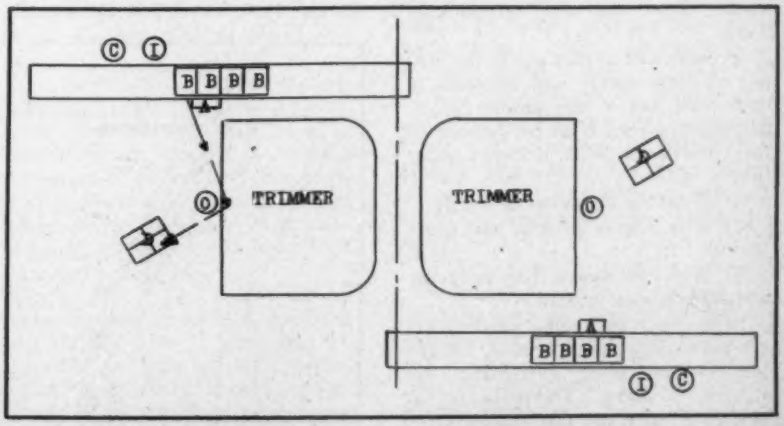



*Fig. 2—New method of trimming. Note flow of material. (A) Drop delivery for shavings, (B) Paper to be trimmed, (C) Counter, (D) Trimmed paper, (I) Inspector, (O) Operator.*

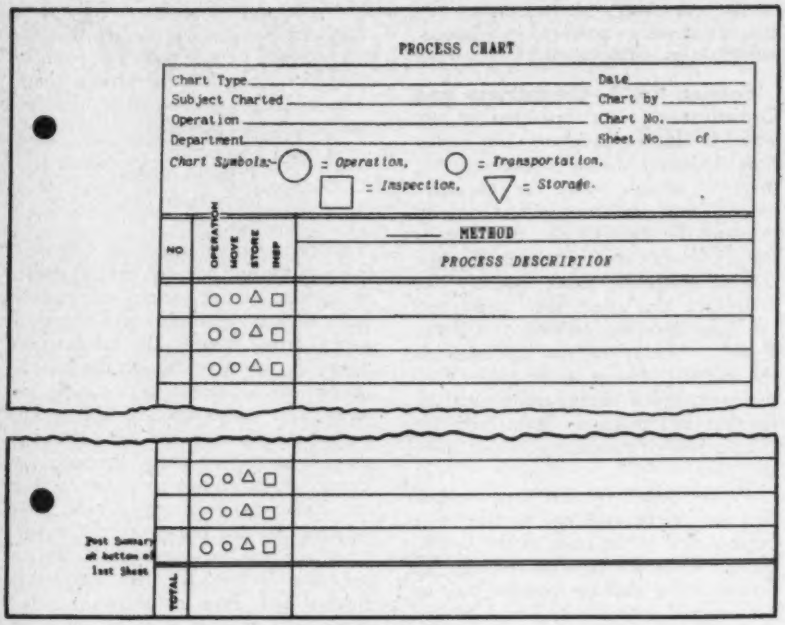



*Fig. 3—Process chart.*

2) Do not confuse the subject being followed. If you start with material, follow the material, and if you start with a person, follow that person.

3) Number all operations and transportations in sequence.

4) It is desirable to show the mode of transportations, and the first letter of the method used, seems to be the standard practice such as, E for elevator, C for conveyors, and M for men.

When a process chart is complete, it will be found that it can be divided into three parts; namely, MAKE READY, DO, and PUT AWAY.

**Session No. 6—Too Busy to Be Efficient.** This session is always given to executives, superintendents and foremen, but only rarely is it given to operators, and then only in the case where these men are foremanship timber.

Several times in this article the saving of time, energy and materials is mentioned, but in this session No. 6, the entire period is to be devoted to the Time Factor. What is known about time?

1) It can be measured definitely.

2) It is always passing and never returns.

3) It can be wasted, just as energy and materials are wasted.

Being busy and being efficient are not necessarily closely related, for the greatest time killer, everything considered, is *hurry*. Therefore, try to eliminate hurry and take things easily, only in the sense, however, that concentration is on the task to be done. Soon you will find that efficiency is increased and output will be stepped up.

Eliminate poor equipment, for many shutdowns can be avoided, and today, this is of greater importance than ever before.

**Session No. 7—Review.** Particular stress is attached to each of the five advantages accruing from the use of a process chart.

Energy saving is very pointedly indicated by the details of a process chart.

Take, for example, the Machine Tender; if by study the work can be simplified, it will result in more time for checking the machine, and in consequence, a better product should be the result.

Production can be made safer if the expended energy can be reduced for anything which lessens the burden, decreases fatigue, as decreased fatigue means a reduction in accidents.

The second advantage of a process chart is that it can serve as a record of all the various parts of an operation. The one best way easily can be established, charted, and made a standard practice for performing an operation or processing material. From the management point of view, this has many advantages and aids in simplifying cost work.

Process charts also have their use as instruction sheets. A process chart can be posted beside the machine to guide the worker in doing his or her job in the established way, thus eliminating the passing on of poor habits from one worker to another.

Process charts also make us motion conscious and invariably make us aware of wasted motion.

The fourth advantage is that it has a definite tendency to make us open minded, and thus puts one on the alert for new and improved methods.

The fifth and last advantage is that it offers a positive means of selling ideas for improvement.

**Session No. 8—The Suggestion System.** Because an effort has been made to educate employees in Work Simplification, it can be expected that the kind and type of suggestion will be of much higher caliber than those received in a plant where ideas depend entirely on a person's ingenuity. For the benefit of the group, the entire Suggestion System is thoroughly described, including how a suggestion is handled; how savings are determined; how the suggestion is evaluated; and how the ward is figured. At Crane & Company, Inc., a separate department studies all suggestions, and after it has determined costs, savings, etc., the suggestions are sent to the mill superintendents for their opinions. When this has been completed,

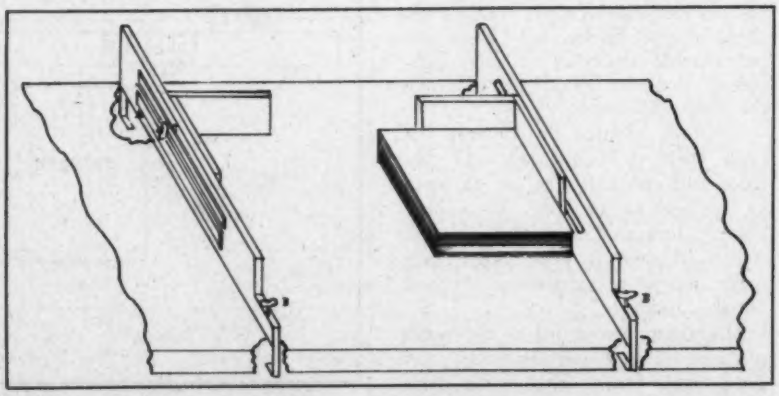


*Fig. 4—Sorter's table. Adjustable device for different sheet sizes. (A) and (B) Right and left adjustments; (C) Front and rear adjustments.*

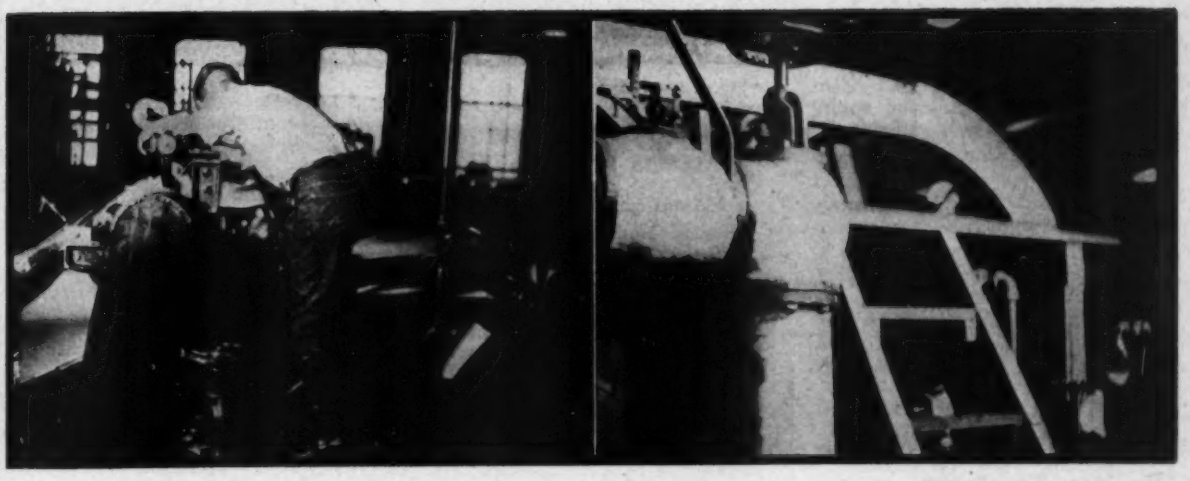


*Fig. 5 (left)—Machine tender adjusting slitters. Note position. Fig. 6 (right)—Platform for easy and safe access to slitters.*

suggestions are sent to the Awards Committee, which consists entirely of executives, for final disposition.

Suggestions receiving unlimited awards are classified as follows: (1) Time Saving, Material Saving, and Improved Quality. Suggestions receiving a minimum award are classified: (2) Housekeeping, Employee Convenience, and Safety. No. 1 is awardable since it results in actual savings which can be figured. No. 2 receives a minimum award since no actual saving can be figured.

**Session No. 9—Work Simplification and Safety.** Many people feel that Work Simplification and safety have no connection. This is based on the belief that safety and efficiency have little in common. It is, therefore, necessary to prove to the participants of the course that they do have much that is mutual.

The more that traveling and handling can be reduced, the greater will be the reduction in accidents, as 69 per cent of accidents can be attributed to travel and handling.

Work Simplification is a reduction in the number of motions, and anything that will cause a decrease in the number of motions will reduce accidents.

Work Simplification studies improve the rhythm of the work, tend to reduce fatigue, and thus reduce accidents.

This clearly demonstrates that a Work Simplification program does contribute to the safety program and should result in a lowering of the accident frequency.

**Session No. 10—Plant Layout.** Without a session on Plant Layout, a course in Work Simplification would be incomplete. In investigating methods to increase the operating efficiency of any plant, the way in which the plant is laid out should be studied. This is done to make certain that waste does not occur due to poor arrangement of departments, equipment, and machines. It is usually true that the older a plant is, the greater the possibilities are that waste occurs due to poor arrangement. It is also true that all things cannot be changed because large investments might not be warranted, but in many cases rearrangement is worth while.

The efficient layout of a plant and equipment becomes a question of study and investigation to establish the way in which the operation will flow the most economically and smoothly. These studies are made by using process charts, scale drawings, and scale templates representing various machines, work places, etc. This method of study will introduce many improvements, and can be used very effectively in the planning of any new installations.

The sessions outlined were given to employees at Crane & Company, Inc. and, in addition, some groups were given sessions on: Man and Machine Charts, Right and Left Hand Charts, and the Fundamentals of Hand Motions.

The length of the course depends entirely upon the individual industry, and the type of work that is being done within that industry. The main object must be to make a better product at a lower cost by making employees realize that their efforts can make a plant efficient, and make their jobs become more secure.

Figures Nos. 1 and 2 show the reduction that can be made in handling and traveling. No. 1 illustrates the old method of trimming paper whereby the paper was counted and inspected, placed on skids, and transported to the trimmer. Shavings were placed in the broke cart to be later taken to the floor below for re-use in the process.

Figure No. 2 shows the plan of the improved method where the paper will be counted, inspected, and slid along the table to the trimmer. A drop delivery will be provided, and the shavings will fall to the floor below.

Figure 3 shows the type of process chart now in use, which is much simpler and easier to use. Figure No. 4, sorters' table, indicates improvement for changing to different sheet sizes.

Figures Nos. 5 and 6 show improvement in working conditions.

A few more examples will serve to indicate the variety of the application that can be made of Work Simplification:

In the beater room by the installation of a handle to operate the stuff pump from the upper floor a considerable amount of the engineer's time was saved. Changing layout and installing conveyors in another department reduced travel 150,000 feet per day. Remodeling an elevator from a steam driven to a hydraulically operated elevator saved quite a substantial number of tons of coal per year. Remodeling of a billing desk increased the daily output of bills.

These are typical of the results that can be expected by the introduction of Work Simplification. It should be strongly emphasized that these ideas are employees' ideas and not the result of any study made by an efficiency expert.

In conclusion, the tangible and intangible value received by Crane & Company through the use of Work Simplification will be briefly summarized. The course was given to executives, superintendents, foremen, and to many employees. As a result, approximately 1,400 ideas have been submitted; 49 per cent of these have

been usable. The actual monetary value has been substantial through the reductions made in the waste of time, energy and material, improvement in quality, and a reduction in unsafe working practices.

Work simplification has had an intangible value of equal or greater importance than the actual monetary return. Listed among the more prominent are: Improved employee relations, recognized value in employees' ideas, employee consciousness of work simplification in connection with their jobs, and supervisory interest in new methods and logically planned installations.

◆

## The New Employee

*(Continued from page 1339)*

The slitter knives on the winder, the winder drums and the handling of rolls, shafts and cores need special care and attention.

The stop switch for this equipment should be close to the point of operation so that the machine can be stopped immediately in case of emergency. Floors and walkways should be kept in good condition for Good Housekeeping will pay dividends.

Paper and board machine operation requires education and training as the primary means of reducing accidents.

### Chemical Hazards

Chemical hazards are burns from corrosive liquids, inhaling poisonous gases, explosion of inflammable gases, or explosion of chemical furnaces from water tubes or water cooled equipment into the incandescent fuel bed, and the handling of lime and soda ash.

These hazards are combatted by standard practice, developed from long periods of experience; the use of safety appliances and equipment; and cleanliness on the part of the employees. There should be men trained in First Aid distributed throughout the various crews.

### Electrical Hazards

Electrical hazards are encountered in the pulp and paper industry. The materials are all transported by water and so many hot liquids are exposed to the atmosphere, that water and high humidity develop electrical hazards. Where such conditions exist, all electrical conductors should be well insulated and run in grounded metal conduits. All high tension cables should be marked and shielded.

Starters and switches should also be clearly marked with the name of the equipment to which starters and switches belong.

Rescue poles should be located at electric equipment and kept dry in case of emergency. This pole should be about six feet long with hook on end to break man loose should he be overcome.

These crews should have several men trained in First Aid.

### Mental and Psychological

Human failure today presents such a problem that it constitutes an emergency in accident prevention. Worry, fatigue, age, ill health, and working conditions are contributing causes of accidents, and can be remedied only by close observation and supervision.

The worker so affected does not respond to safety preachments; he must be made conscious of safety by having it become a part of his everyday life, largely through demands made upon him and by good working conditions. If an employee is given proper tools, in a plant where good housekeeping prevails, an employer can, with intelligent supervision, demand a good, safe day's work of every employee.

## Making Solid Tooth Circular Wood Cutting Saws Last Longer

| Failure | Cause | Correction |
|---|---|---|
| Cracks in Gullets | Sharp corners in gullets | Keep gullets well rounded |
| | Case hardened gullets | Remove case hardening by lightly grinding gullets with a soft emery wheel |
| | Incorrect tension for operating speed | Have saw hammered to suit operating speed |
| | Dull teeth, too much or insufficient set | Refit with correct set — teeth must have sufficient set for clearance, more for soft wood than for hard—and sharpen saw |
| | Out of round | Joint saw so all cutting teeth are same height. Set and sharpen saw |
| | Teeth incorrectly spaced or not proper shape | Use a fine tooth saw for thin work; coarse tooth saw for heavy work |
| Overheating | Teeth too dull | Refit and sharpen teeth |
| | Insufficient set | Increase amount of set |
| | Feed too heavy | Reduce feed or select saw to stand feed |
| | Saw speed too fast for size and shape of teeth | Reduce speed or select saw with correct teeth for job |
| Loss of Tension | Overheating — frequently caused by saw hanging up in the cut | Have saw rehammered to restore tension |
| | Using too much pressure or incorrect grade and grit gumming wheel | Have saw rehammered to restore tension. Consult emery wheel manufacturer for correct wheel |
| Leading in the cut (not holding to line) | High range of teeth. Wider set on one side than on the other | Joint teeth. Adjust set. Resharpen saw |
| | Mandrel collars not true—arbor out of alignment | Check collars and arbor carefully |
| | Saw too thin for work | Heavy gauge saw required for heavy cutting. Thinner saw for thinner work |

NOTE: Do not operate a saw which is cracked. Slot crack and file radius at bottom of slot—do not punch or drill hole at bottom of crack. Retension and refit before operating again.

Don't feed work to saw unevenly. Feed uniformly and steadily so that each tooth will do an equal share of the cutting. An unsteady feed gives an unsatisfactory cut.

Don't fail to follow instructions for setting saws. Remember soft woods require more set than hard woods.

Don't overlook the importance of seeing that saw spindle, or mandrel, is level, runs freely and has no end play. Also that it has smooth, even collars, that bearings are kept well lubricated at all times.

Unless otherwise specified, these saws are tensioned for a rim speed of 10,000 feet per minute.—*Henry Disston & Sons, Inc.*

# Nomographic Correction Chart

## for the Williams Precision Freeness Tester

**D. S. DAVIS, Wyandotte Chemicals Corporation**

▶▶▶ NOMOGRAPHIC FREENESS correction charts have been constructed for use with the Schopper-Riegler beating tester (*1*), the Canadian Standard freeness tester (*2*), and the Williams Model B freeness tester (*5*). It is the purpose of this paper to present a similar alignment chart covering consistency corrections in the case of the Williams Precision freeness tester (*3*).

For the latter design it has been shown (*6*) that freeness values are linear with the sample weight of pulp taken and that the freeness-weight curves converge at the water calibration value, 4.6 seconds. Conversion of freeness values to the standard sample weight of 3 grams (bone-dry) may be expressed by the equation

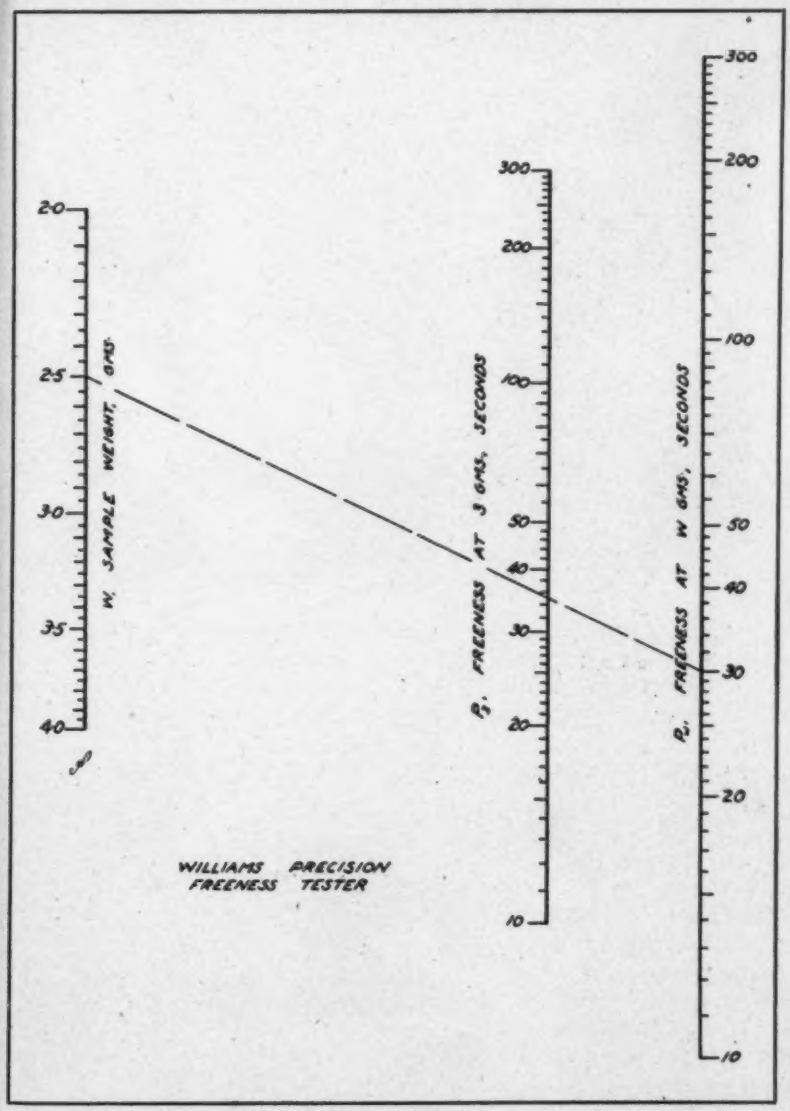
$$P_3 = \frac{3}{w}(P_w - 4.6) + 4.6$$

where $P_3$ is the freeness value in seconds at the standard sample weight and $P_w$ is the freeness value when w grams of bone-dry pulp are used.

This equation can be solved accurately and conveniently by means of the accompanying logarithmic alignment chart which was constructed by methods described previously (*4*).

The use of the chart is illustrated as follows: What is the freeness at the standard sample weight when the freeness determined at 2.5 grams is 30 seconds? A straight line connecting 2.5 on the w scale with 30 on the $P_w$ scale will cut the $P_3$ scale in the desired value, 35 seconds, as shown by the broken line on the chart.

What is the freeness at a sample weight of 3.3 grams when the freeness at the standard sample weight is 91 seconds? Connect 3.3 on the w scale with 91 on the $P_3$ scale and read the freeness at 3.3 grams as 100 seconds on the $P_w$ scale. What sample weight should be employed so that stock testing 20 seconds under standard conditions will test at least 25 seconds? A straight line connecting 25 on the $P_w$ scale with 20 on the $P_3$ scale will intersect the w scale at 3.97 grams. A sample weight of 4 grams would probably be chosen as the new standard. Index lines for these samples are not shown on the chart.




### Literature Cited

1) Davis, D. S., *Paper Mill*, 54 (15) 30 (1931); *Pulp and Paper Mag. Can.*, 31, 911 (1931).

2) *Idem, Pulp and Paper Mag. Can.*, 31, 586 (1931); *Paper Makers' Monthly J.*, 69, 241 (1931); *Chemical Engineering Nomographs* Fig. 65, McGraw-Hill Book Co., Inc., New York, 1944.

3) *Idem, Paper Trade J.*, 88, 22, 173 (1929); TAPPI Papers, Series 12, 184 (1929).

4) *Idem*, Empirical Equations and Nomography, p. 104, McGraw-Hill Book Co., Inc., New York, 1943.

5) *Idem*, PAPER IND. AND P. WORLD, 25, 879 (1943).

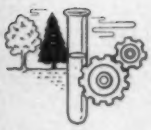
6) Worm, E. A. and Davis, D. S., *Paper Trade J.*, 89, 23, 235 (1929).

**If new and unpredictable demands for paper and paperboard do not increase materially and if possible improvements in pulpwood production are realized, the paper situation should not deteriorate further, and there may be some improvement in the second half of 1944.—Harold Boeschenstein.**

# PAPER SKETCHES

SANITARY ONE-PIECE BATH SLIPPERS, MADE OF WATERPROOFED PAPER ARE USED BY MANY ATHLETIC ORGANIZATIONS AND GOLF CLUBS . . . .
MATERIALS WORTH $40.21 WERE SALVAGED FROM WILLIAM RITTENHOUSE'S FIRST PAPERMILL, DESTROYED BY A FLOOD IN 1702. THESE MATERIALS WERE USED IN CONSTRUCTING RITTENHOUSE'S SECOND MILL!
AS LATE AS 1850, PHELPS & SPAFFORD OF WINDHAM, CONNECTICUT, AND HOWE & GODDARD OF WORCESTER, MASSACHUSETTS, ARE BELIEVED TO HAVE BEEN THE ONLY MANUFACTURERS OF FOURDRINIER MACHINES IN THE U. S. A.
IN 407 B.C., ATHENIANS PAID 1 DRACHMA, 2 OBOLS (APPROXIMATELY 1½¢) FOR A SHEET OF PAPYRUS OF A SIZE SUFFICIENT TO PRODUCE ONE SMALL VOLUME.
Turkle

# IT'S NOT TOO LATE TO SHORTEN THE WAR



Let's not kid ourselves. There's no reason to expect an early or an easy victory. Our boys have a lot of hard fighting to do before they come home. And American industry still has a big job of war production ahead before it is time to put post-war plans into operation.

Brown Company had undertaken a far reaching development program even before the war began. New and exciting possibilities were fast taking shape. Now, under the pressure of war, our research laboratories and mills have made tremendous advances in the utilization of wood cellulose fibres. Many of these wartime advances can be readily adapted to the Company's post-war civilian program. But right now our job is to back the attack of our armed forces. Brown Company's unique experience as pioneers in wood cellulose fibres is helping many manufacturers to produce better products that will aid in shortening the war. The Company's broad knowledge of specialized wood pulps and papers is available to other war manufacturers who are faced with raw material problems.

Forget the comforting assurances of "ultimate" victory. Let's get it over *quick*. Every extra day means that more American boys will be missing from the victory parade.

## BROWN COMPANY

FOREMOST PRODUCERS PURIFIED CELLULOSE

*SALES OFFICES:* 500 FIFTH AVE., N.Y.C. – *MILLS:* BERLIN, N.H. & LA TUQUE, P.Q.

# The Paper Industry Pledges Support

## "Until the Struggle Is Ended"

▶▶▶ "NO INDUSTRY HAS more wholeheartedly co-operated with every Government effort, and this spirit of service to the Nation is fully recognized at Washington. On behalf of the American Paper and Pulp Association and its constituent divisional associations, I pledge our Government the continuance of this support, until the struggle is ended."

With these words, George H. Mead, president of the American Paper and Pulp Association, opened the convention of that organization in the biggest and most important session in its sixty-seven years of existence, beginning with divisional meetings Sunday, February 13, and continuing through Thursday, February 17.

In the spirit of Mr. Mead's pledge, the Association secured a succession of outstanding speakers, including the most prominent War Production Board officials. These officials told of the aims of the Government, and the manner in which the paper industry could help win the War. Donald M. Nelson, Chairman of the WPB, and Harold Boeschenstein, director of the Board's Forest Products Bureau, were only the leaders in a procession of notable speakers. While the entire convention program was highlighted by studies of the methods by which the paper industry can produce the paper urgently needed for the war effort, and at the same time manufacture the grades of paper needed to maintain civilian morale and to meet every-day requirements, an important sidelight was the question of future prices. At the very outset of the convention, the Office of Price Administration issued an order raising the ceilings of various grades of pulp, and the problem of how these increases in the price of the basic raw material would be met in the price structure of paper and paper products could not fail to be given much study.

The magnitude of this convention can best be appreciated when it is noted that the official convention program listed ninety-five separate meetings of the parent association and its affiliated groups, and this list did not include the many meetings of the Technical Association in progress at the same time in the Commodore Hotel.

That this was not a convention in the ordinary sense of the word was evident from the opening day when the various divisional groups began their conferences, all based on the part each should play in the War effort. As Mr. Mead stated it, this gathering was a conference of representatives of one of America's greatest industries to determine the best steps which this industry could take to further assist its Government in winning the War.

Some of the features of the convention can be summarized as follows:

All Association and divisional meetings devoted their time to means of perfecting the industry's part in co-operating with the Government to produce at a minimum practical cost, the volume of paper and paper products needed by the Government and the civilian population.

War Production Board speakers not only discussed details of procedure, but stressed the fact that all of their efforts were devoted to helping the industry maintain production; making certain, however, that if any shortages occur, War requirements must be the first to be filled.

Studies of the pulpwood problem were devoted to efforts to secure the needed manpower to get wood from the forests to the mills. This was recognized as a basic essential to full industry operation, and the statement was repeatedly made that if woods labor were available, there would be no shortage of paper for either Government or civilian requirements.

Much attention was given to the various problems involving Canadian and American co-operation in the production of pulpwood, pulp, paper, and paperboard.

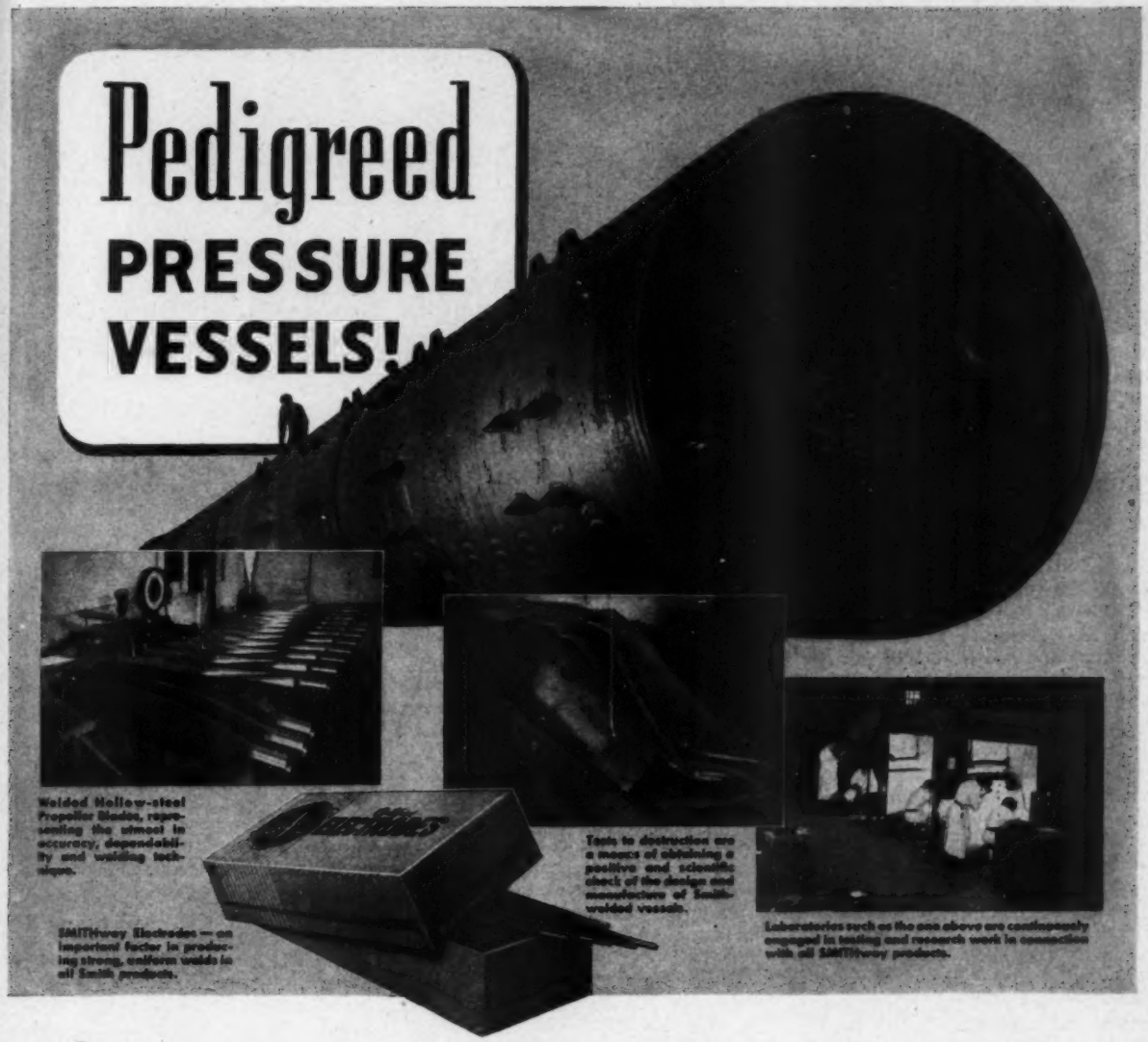
Legislative problems at Washington, such as forest taxation, possible tariff legislation, and legislation to ease the pulpwood labor question were considered and appropriate steps for future action discussed.

Statistical research, the continuance of the present favorable labor relations, and similar industry problems were studied by appropriate Association committees.

While the public addresses of Gov-

*L to R—George W. Sisson, Jr. (Racquette River Paper Co.), a past president of the APPA; J. Ronald Atwater, Paper Division OPA; George H. Mead (president Mead Corp.), president APPA; and Harold Boeschenstein, director Forest Products Bureau, WPB.*

# Pedigreed PRESSURE VESSELS!



Welded Hollow-steel Propeller Blades, representing the utmost in accuracy, dependability and welding technique.

SMITHway Electrodes — an important factor in producing strong, uniform welds in all Smith products.

Tests to destruction are a means of obtaining a positive and scientific check of the design and manufacture of Smith-welded vessels.

Laboratories such as the one above are continuously engaged in testing and research work in connection with all SMITHway products.

Some people seem to think it is easy to make a pressure vessel. We don't!

Some people seem to think a pressure vessel can be designed and built from the data contained in the standard engineering handbooks.

We don't! We never have.

We learned how to make pressure vessels by a long and difficult process of experiment, testing, and experience.

In our plant, one of the world's greatest steel-working plants, we have learned much about steel. Therefore, the steel that goes into A. O. Smith Pressure Vessels is produced to A. O. Smith specifications.

In our plant, one of the world's greatest welding plants, we have learned much about welding. Therefore, we developed our own welding processes—even to the point of making our own electrodes.

And step by step we tested! In our own metallurgical and physical testing laboratories we proved each minute point in the process. We made pressure vessels for ourselves that we might *test them to destruction!*

Then and only then did we know! Thus we established the pedigree by which you can judge pressure vessel value and buy with assurance.

***BUY MORE WAR BONDS!***

**ELECTRIC-WELDED** PRESSURE VESSEL

## *A. O. SMITH Corporation*

*MILWAUKEE 1 • WISCONSIN*

**Offices of:** NEW YORK • PITTSBURGH • CHICAGO • TULSA • HOUSTON • LOS ANGELES • SEATTLE

*L to R—Harold Crabtree, former president Canadian Pulp and Paper Association; Cola G. Parker (president Kimberly-Clark Corp.); D. C. Everest (president Marathon Paper Mills Co.), recipient of TAPPI medal for 1944; Hugh J. Chisholm (president Oxford Paper Company), and Donald M. Nelson, War Production Board, guest speaker at the luncheon.*

ernment officials were the features of the open meetings, the meeting of the Association's Board of Governors and Executive Committee developed the beginning of a new method of managing Association affairs. Hitherto it has been the custom to select the Association president and vice presidents from among those who have been most prominent in past Association activities, but steps were taken to bring some new and younger blood into the Association's Executive Committee. Quite informally, with no change in the by-laws, a nominating committee made up of the most recent presidents of the Association canvassed the industry and nominated Dan K. Brown, president of the Neenah Paper Company, for president. He had served the last two years as first vice president, but the nominating committee made no suggestion for such an office for the coming year. Instead, fifteen vice presidents, including men who never before have been prominent in Association affairs, were named to constitute the Association's executive committee. These vice presidents were elected as follows: Folke Becker, president, Rhinelander Paper Co., Rhinelander, Wis.; Hugh J. Chisholm, president, Oxford Paper Co., New York; R. K. Ferguson, president, St. Regis Paper Co., New York; P. H. Glatfelter, president, P. H. Glatfelter Co., Spring Grove, Pa.; J. H. Hinman, president, International Paper Co., New York; D. S. Leslie, executive vice president, Hammermill Paper Co., Erie, Pa.; R. A. McDonald, executive vice president, Crown-Zellerbach Corp., San Francisco; John R. Miller, vice president, West Virginia Pulp & Paper Co., New York; Robert F. Nelson, president, Glassine Paper Co., Conshohocken, Pa.; Cola G. Parker, president, Kimberly-Clark Co., Neenah, Wis.; Dwight L. Stocker, president, Michigan Paper Co., Plainwell, Mich.; R. B. Wolf, manager, Pulp Division, Weyerhaeuser Pulp & Timber Co., Longview, Wash., and George R. Wallace, president, Fitchburg Paper Co., Fitchburg, Mass. E. W. Tinker was re-elected executive secretary and treasurer.

Three big noon luncheons each attracted a large number of manufacturers and guests, that on Monday being the annual luncheon of the American Paper and Pulp Association. The Tuesday luncheon was devoted to the campaign of the Salesmen's Association of the Paper Industry for the inauguration of a paper industry publicity campaign.

On Thursday, at the Commodore Hotel, the Technical Association of the Pulp and Paper Industry held its annual luncheon, at which time the TAPPI medal was presented to D. C. Everest.

The Monday luncheon was the chief public function of the American Paper and Pulp Association's meeting. It was here that President Mead discussed the attitude of the paper industry toward the Nation's war effort. After discussing the problems of the past forty years, and the present War as the most critical of these, he said:

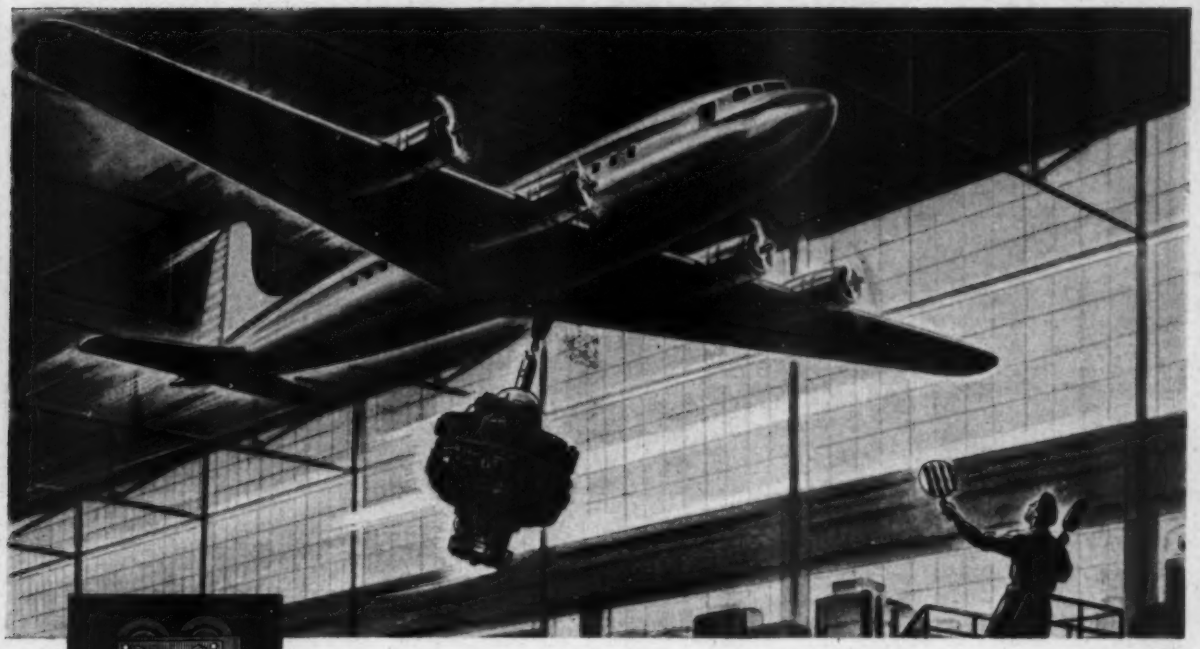
"It is my observation that if we are to avoid a third world conflagration within another twenty-five years, the four segments of society in America—Agriculture, Labor, Industry, and Government—must now sit down together around the table and prepare plans for the future course of our country that will show the way to a peaceful period of development such as never before has been realized. From personal experiences of the past ten years, and particularly the last three, I believe that this can be done."

Mr. Mead then introduced Donald M. Nelson, Chairman of the War Production Board, who was both complimentary to the paper industry for the manner in which it has co-operated in the war emergency, and optimistic as to the manner in which future problems can be met.

"Paper is essential to keep a strong and sound economy to carry on the War," said Mr. Nelson. "We do not like to ration products, but it is essential to maintain distribution. The paper industry has done a good job, so good a job that it has been taken for granted. I cannot begin to tell you of the importance of paper in this War. The question is, how are we going to get more? We have every confidence that problem is going to be licked. As long as the military men require goods, we are going to supply them. That is the first job. The second job is to provide paper for the civilian economy. The ideal is to increase production so that a number of items will not have to be eliminated. Some items have had to be eliminated and as production is increased we are going to reinstate them."

Harold Boeschenstein, director of the War Production Board's Forest Products Bureau, including all kinds of paper and paper products and the raw materials essential to paper and board production, said that all but a very small proportion of the 700,000 items required by the military services require packaging in paper, paperboard, or lumber, and all come from the same primary source, the forest.

"The War Production Board," said Mr. Boeschenstein, "has a responsibility of laying before this industry these facts: (1) What are we trying to do. (2) Why is it necessary, and (3) as far as possible to see that there is an



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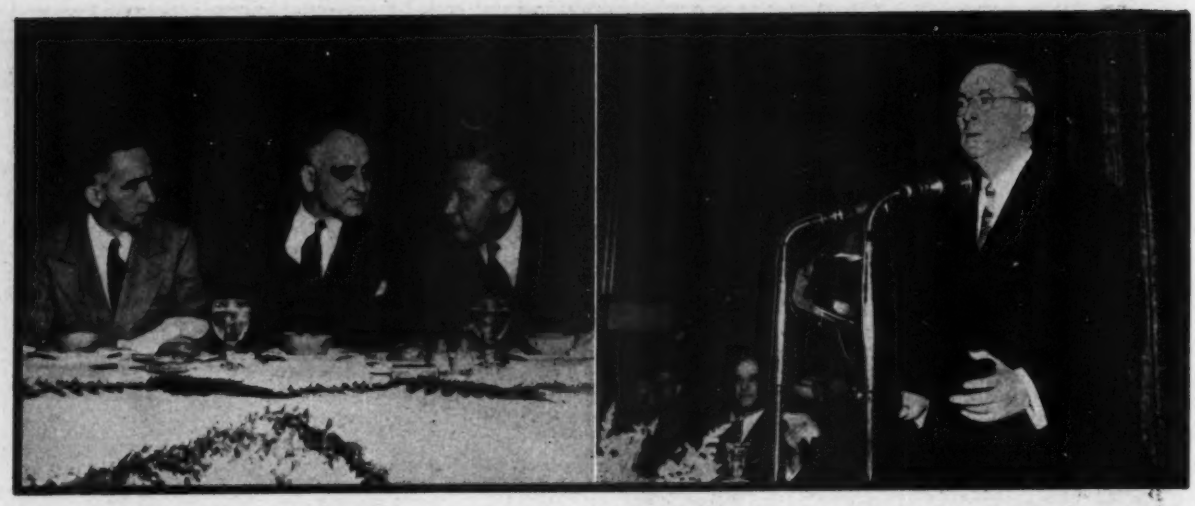


*L to R—E. W. Tinker, secretary APPA; Ralph A. Hayward (president Kalamazoo Vegetable Parchment Company), president of TAPPI; R. C. Kettles, Jr. (president Charles F. Hubbs & Co.); Closeup of Donald M. Nelson speaking at APPA luncheon.*

equitable sharing of the load. The problems facing the pulp and paper industry are: *First*—to increase the production of raw materials, primarily pulpwood, supplemented by waste-paper stock, and to do this in spite of manpower and equipment shortages. *Second*—Recognize the long 'in process' cycle with the exception of the South, which makes it necessary to bring consumption into balance with production. Consumption must be brought into line with production on the basis of pulpwood supply because we no longer have more than working inventories to draw on. *Third*—Make sure that critical and most essential paper requirements are taken care of first and in necessary amounts."

Mr. Boeschenstein concluded by emphasizing the need for getting every possible wood cutter into the forest to cut the pulpwood necessary if the essential paper requirements are to be met.

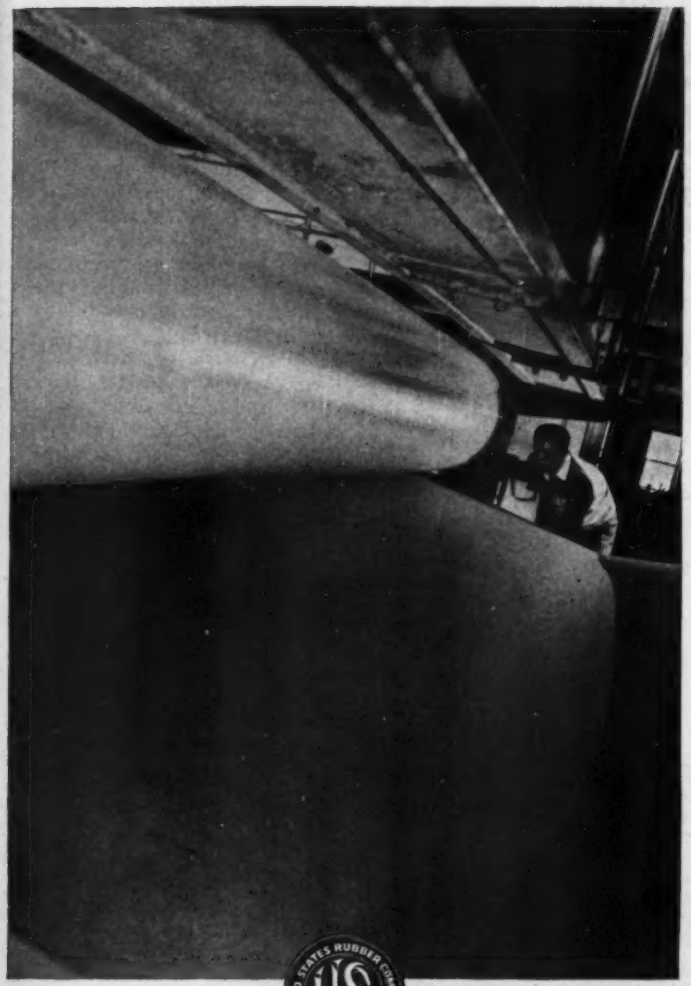
Harold Crabtree, speaking for the Canadian Pulp and Paper Association, pledged the co-operation of Canada in every effort of the continental industry to produce paper essential for military and civilian needs.

In his annual report, E. W. Tinker, executive secretary of the American Paper and Pulp Association, emphasized the importance of the pulpwood problem in the maintenance of paper production. The chief difficulty, he said, was in getting the manpower necessary for woods operations, and listed many of the steps that already have been taken to attain the desired objective.

Another important open meeting on the convention schedule was a forum at which three representatives of the War Production Board discussed the problem of pulp and paper controls. James L. Madden, assistant director of the Paper Division, in charge of pulpwood problems, said that present indications are that the pulpwood deficit for the current year will be about 3,000,000 cords, but that every effort is being made to increase the output and enable the mills to more nearly meet all paper needs than this shortage would indicate.

David Graham, chief of the Pulp Allocation Office of the War Production Board, outlined the policies on which pulp allocation is effected and the manner in which the output of paper and board from the various types of mills is regulated by allotments of pulp. He pointed out that it was the policy of the Board to keep all mills in operation, but on the products most essential. The varying problems affect wholly integrated mills,

*A. E. Cadman, secretary of the Canadian Pulp and Paper Association registering for the convention.*



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Now that synthetic rubber is a "must," maybe you've been wondering how it will work out in paper rolls. Here's our answer:

U. S. Synthetic Rubber Roll Coverings have core adhesion equivalent to previous standards for natural rubber, excellent uniformity of density, polished surfaces free from imperfections, low drift with resultant freedom from corrugation.

U. S. Rubber Company chemists and engineers have been working with synthetic rubber for more than twenty-five years. They are thoroughly familiar with all five basic types, know the characteristics and properties of each. They have drawn upon this backlog of knowledge and experience to engineer and compound paper rolls of synthetic rubber.

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**COMPOUNDING SKILL** is a prime requisite in producing good paper mill rolls. U. S. Synthetic Rubber Rolls are compounded by men who know the characteristics of each type of synthetic rubber, and how to compound the proper type to handle a specific roll job.

**MANUFACTURING SKILL.** Calibration of a finished roll is only one step in the careful inspection, and careful manufacture of U. S. Paper Mill Rolls. It is your assurance that the crown is accurately determined and that finished dimensions are as specified. Remember, too, that the men who compound the synthetic rubber for the roll covering have had long experience in working with synthetic rubber and that each U. S. Paper Mill Roll is staff-engineered.

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those which make more pulp than they require for their own operations, the mills which make some pulp but need purchased pulp to fill their requirements, and those mills which are entirely dependent on purchased pulp. The policy, he said, was to divert sufficient pulp from integrated or partially integrated mills to converter plants in a sufficient amount to keep the converter mills in operation, but not to such an extent as to jeopardize the normal operations of the mills with pulp-making equipment. He said that the essentiality of the paper industry is fully realized by the War Production Board, but that the Board must make its first effort the production of the paper needed for the direct War effort.

Rex W. Hovey, director of the Paper Division, warned against any feeling that the War is nearing its end and that, therefore, the paper industry can begin to relax its efforts to conserve raw materials, secure the highest possible use of substitutes for new wood pulp, and to use all of its technical skill to stretch the raw material supply to the utmost to produce the greatest amount of paper possible.

While the American Paper and Pulp Association was devoting its attention to these critical production problems, the National Paper Trade Association also devoted part of its program to support of the manufacturers' program for increasing output. As part of this program, that Association secured Philip J. Philbin as one of its principal speakers, to tell of his efforts to secure legislation granting deferment to woods workers, to the end that more pulpwood could be brought to market.

◆

## CHAS. VINING RETURNS AS PRES. OF CANADIAN NEWSPRINT ASS'N

Following a two-year absence spent in the service of the Canadian government, Charles Vining, president of the Newsprint Association of Canada since 1934, returns to association responsibilities. Paul Kellogg, acting president *pro tem*, now is general manager.

During his government activities, Mr. Vining served as assistant to the chairman of the Wartime Prices and Trade Board. Later, he was made News Print Administrator, and in 1942 reported to his government on Canadian publicity in the United States, which led to the establishment of the Wartime Information Board. This he headed as chairman. Ill health compelled Mr. Vining's temporary withdrawal from activity in 1943, and he returned to Montreal only recently.

Paul Kellogg is head of the firm of Stevenson and Kellogg, Ltd., management engineers, Montreal.

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## CHICAGO PROFESSIONAL PAPER GROUP MEETING

Approximately 250 members and friends of the Chicago Professional Paper Group met during the evening of February 7 at the Medinah Club for a program on Waterproof Adhesives for Cartons and Containers.

Preceding the main session, a movie "packaging—A Public Service" supplied by *Modern Packaging*, was presented. This movie is a color film that pertains to all types of modern packaging. An introduction to the problem of waterproof adhesives for cartons and containers, in opening the feature event of the program, was presented by Major James D'A. Clark, of the U. S. Subsistence Research Laboratory, Quartermaster Corps, Chicago. The remainder of the session was given over to the answering of a number of questions, submitted in advance of the meeting, by a panel of experts. The panel included: George W. Gray, The Arabol Manufacturing Company; Ralph Findley, F. C. Findley Company; S. F. Thune, National Adhesives, Division of National Starch Products, Inc.; Sam Schuler, Paisley Products, Inc.; J. E. Killinger, Penick & Ford, Ltd., Inc.; S. W. Campbell, Testworth Laboratories; and M. Warford, Wishnick-Tumpeer, Inc. Harry E. Weston, Editorial Director of THE PAPER INDUSTRY AND PAPER WORLD served as moderator.

The questions covered a wide range of subjects, and revealed very definitely the amount of technical knowledge that is involved in the use of paper and paperboard as a packaging material.

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## MIAMI VALLEY SUPTS. HEAR ADDRESSES ON SUBJECT "OLD PAPERS"

The Miami Valley Division of the American Pulp and Paper Mill Superintendents Association held a dinner meeting in the Manchester Hotel, Middletown, Ohio, on February 5.

The subject "Old Papers" formed the basis of a panel discussion, in which the following speakers participated: Walter E. Sooy, Gardner-Richardson Company, Middletown, Ohio; Otto Hein, Shartle Brothers, Middletown, Ohio; S. R. Olsen, Champion Paper and Fibre Company, Hamilton, Ohio; and Herbert Brown, Miamisburg Paper Company, Miamisburg, Ohio.

Mr. Sooy discussed the uses of wastepaper in the industry, pointing out that the already serious shortages of pulp and paper were further aggravated by the shipment abroad of a large proportion of the industry's output for war purposes, and its non-return in the form of wastepaper.

Modern equipment used in the conversion of wastepaper, and the various types of machinery in operation was covered by Mr. Hein.

Mr. Olsen spoke on cooking processes employed in wastepaper conversion. He told of difficulties involved in processing old papers (which are contaminated with high wet-strength paper) and in handling book and magazine papers (abnormally high in groundwood content).

The bleaching of old papers, together with the screening and elimination of dirt, was outlined by Mr. Brown.

◆

## CANADIAN FORESTRY ASSOCIATION MOVES FOR CONSERVATION

Entering its forty-fourth year of crusading in the cause of conservation, the Canadian Forestry Association held its annual meeting at the Windsor Hotel, Montreal, on February 7.

In a brief address, G. Percival Burchill, LL.D., of South Nelson, N. B., retiring president, affirmed that a new consciousness of the value of Canada's vast forest resources had grown out of the War.

For the past year the Association has utilized every means at its disposal in conducting a nation-wide campaign stressing the necessity of conservation. This program has resulted in increased public co-operation with forest protection services, a new alliance with hunters and fishermen in the field of preservation, progressive measures of government forest administration, and the cautious handling of the forests by the industry.

Robson Black, newly elected president and general manager, and Dr. John S. Bates, vice president and chairman of the executive committee, were elected to the national executive board. Henri Kieffer was elected chairman of the board of directors; and W. A. Mather, Winnipeg, C.P.R. executive, is chairman for the prairie provinces. P. H. Scowan, general manager of Brompton Pulp and Paper Company, was made a director.

Last year's financial report showed revenues of $36,032.

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**1** **Make knives sharp.**

**2** **Make them last longer, by removal of a minimum of steel.**

**3** **Sharpen them right the first time, to avoid needless re-sharpening and waste of manpower and metal.**

Calls for increased production will face the pulp and paper industries in coming months, as war makes heavier demands. To meet this situation, mills must keep their equipment in the best of condition, although little new equipment is available. A few machines can now be supplied to the Paper Industry.

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Many knife grinding problems can be solved by consulting the new 471-page 5th edition of the Covel-Hanchett SAW-AND-KNIFE FITTING MANUAL, completely revised and just off the press. This manual has been the standard handbook of knife and saw sharpeners in pulp, paper and saw mills for many years.

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# Wartime Conference of A. P. P. A.

▶▶▶ WITHOUT QUESTION, the largest number by a wide margin of paper and pulp mill executives and officials in the lengthy history of the industry gathered in New York on February 13-17 to attend the sixty-seventh annual convention and wartime conference of the American Paper and Pulp Association and affiliated organizations. The spacious halls, lobbies and meeting rooms of the Waldorf-Astoria Hotel were crowded to capacity throughout the five-day convention. Virtually every paper and pulp producing and merchandising unit in the United States, and many in Canada, had representatives in the huge attendance at the yearly get-together of the industry, with nearly all sections of the North American Continent represented.

Wartime shortages and coincidental problems were the principal subject of the various speakers and the chief consideration at the numerous meetings during the convention. Wartime Government officials from the leading Government agencies at Washington and elsewhere were present, and it may be said that this year's convention was truly an industry - Government conference in behalf of greater joint co-operation in the nation's war effort.

At the joint meeting of the Association's Executive Committee and Board of Governors in the Carpenter Salon of the Waldorf-Astoria, February 16, Daniel K. Brown, president of the Neenah Paper Company, Neenah, Wis., was elected president of the American Paper and Pulp Association for 1944. Mr. Brown, who had been first vice president during Mr. Mead's regime, succeeds George H. Mead, of the Mead Corporation, Chillicothe, O., who served as president of the Association for two years.

The following vice presidents, also constituting the Executive Committee, were elected:

Folke Becker, Rhinelander Paper Company, Rhinelander, Wis.; Hugh J. Chisholm, Oxford Paper Company, New York City; R. K. Ferguson, St. Regis Paper Company, New York City; P. H. Glatfelter, P. H. Glatfelter Company, Spring Grove, Pa.; J. H. Hinman, International Paper Company, New York City; D. S. Leslie, Hammermill Paper Company, Erie, Pa.; R. A. McDonald, Crown Zellerbach Corporation, San Francisco, Calif.; John R. Miller, West Virginia Pulp & Paper Company, New York City; Robert F. Nelson, Glassine Paper Company, West Conshohocken, Pa.; Cola G. Parker, Kimberly-Clark Corporation, Neenah, Wis.; Dwight L. Stocker, Michigan Paper Company, Plainwell, Mich.; R. B. Wolf, Pulp Division, Weyerhaeuser Timber Company, Longview, Wash., and George R. Wallace, Fitchburg Paper Company, Fitchburg, Mass.

E. W. Tinker was re-appointed executive secretary and treasurer.

Welcoming the paper and pulp manufacturers to the convention, President George H. Mead said:

"In welcoming the paper manufacturers of the United States to the sixty-sixth convention of the American Paper and Pulp Association, I must emphasize the fact that this is not a convention in the usual sense of the word. It is a conference of representatives of one of America's greatest industries to determine the best steps which this industry can take to further assist its Government in winning the war.

*D. K. Brown, newly elected president of the American Paper and Pulp Association.*

"The paper industry, I am proud to say, enlisted for the duration when this country entered the war. We have backed the attack with increased efficiency in operation, the highest technical experience, and loans of our brilliant top-flight executives to Government agencies, without regard for individual or company benefits or sacrifices.

"No industry has more wholeheartedly co-operated with every Government effort, and this spirit of service to the Nation is fully recognized at Washington. On behalf of the American Paper and Pulp Association and its constituent divisional associations, I pledge our Government the continuance of this support until the struggle is ended.

"Without the paper produced by this industry, the war could not continue for twenty-four hours. Paper is vital to the war effort in many ways. It is essential for direct war purposes. It is an essential commodity for those industries which are producing war weapons and equipment. It is essential for the every-day requirements of the civilian population, if we are to have the morale at home which means so much in maintaining military operations and industrial production at high level.

"Despite the tremendous drains on the industry's resources to produce the paper needed by the Nation, it has been able to maintain a high rate of production. War requirements added to civilian needs have caused an unprecedented demand for our product. The wonder is not that there is a shortage—but that the stringency is not more severe.

"For two years preceding actual entry into the war, the Nation was preparing for any emergency which might develop. Today we are in the midst of actual war, but the paper industry is alert to the necessity to plan *now* for the postwar era. While we are giving our utmost to the war effort, we are devoting and must continue to devote the most intensive study to postwar problems—to perfect our preparedness for peace."

One of the highlights of the convention was the annual luncheon of the American Paper and Pulp Association on Monday, February 14, in the Grand Ballroom of the Waldorf-Astoria. President George H. Mead presided. The principal speakers were Mr. Mead, Donald M. Nelson, director of the War Production Board, Washington; Harold Boeschenstein, director of the Forest Products Bureau of the WPB; Harold Crabtree, president of the Howard Smith Paper Mills and past president of the Canadian Pulp and Paper Association, and E. W. Tinker, executive secretary of the American Paper and Pulp Ass'n.

Mr. Nelson, whose address was extemporaneous, stressed the serious shortage of pulp and paper, but asserted that he has every confidence, despite the manifold difficulties involved, this shortage will be surmounted.

"Paper is essential to keep a strong and sound economy to carry on the war," said Mr. Nelson. "The paper industry has done a good job, so good

*The Ecusta Paper Corp. beater room is served with double-girder, 4-ton, power-driven Cleveland Tramrail Cranes.*

*A special motor-driven roll-over box grab is provided for each crane. The pulp is emptied into the beaters simply by pressing the button. Boxes are easily locked into the grab by use of a crank.*

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Most likely the paper in the cigarettes that you smoke was transported on Cleveland Tramrail equipment at the great mill of the Ecusta Paper Corporation, Pisgah Forest, N. C. The major part of the nation's needs is produced here. Ecusta paper is used by all the leading cigarette manufacturers.

Cleveland Tramrail cranes and overhead rail system serve almost every department. Automatic roll-over grabs empty boxes of pulp into beaters and digesting machines. Heavy rolls of finished paper are handled in the cutting room with Cleveland Tramrail roll grabs. All equipment is completely motorized.

Only because of Ecusta's foresightedness is it possible to obtain needed supplies of quality cigarette paper. The paper that formerly came from France, of course, is unobtainable.

By planning ahead, Ecusta is the leader in its field today. Other companies who will be leaders in their fields tomorrow are laying the groundwork now. Cleveland Tramrail is aiding many of them in the preparation of modern, efficient methods for handling materials. If you are looking for ideas, you will find that your local Cleveland Tramrail engineer has a wealth of information to offer you.

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a job that it has been taken for granted. I can't begin to tell you of the importance of paper in this War. The question now is, how are we going to get more of it? We in the Government have every confidence that problem is going to be licked by you gentlemen in the paper industry. We know all the difficulties, and there are many, yet we realize we have to get more paper and at the same time hold the line in prices.

"We do not like to ration products, but it is essential to maintain proper distribution. I can say to you today that American industry has responded to the job of production 100 per cent. The production that has been reached speaks eloquently for our system of free enterprise.

"As long as the military forces require paper, along with other goods, we must supply them. That is the first and important job. The second job is to supply paper for the civilian economy. The idea is to increase production so that elimination of some items is not necessary. We have been compelled to eliminate some items, but as production is increased, we will reinstate them. This is the job before you, a job right in your laps."

Mr. Nelson commented on the tremendous task of supplying our armed forces. He pointed out that the Army, Navy and Marine Corps require a total of more than 700,000 different items. He appealed to the paper industry to send more of its best men to Washington to assist the Government in the war job. He also urged the paper manufacturers to give precedence in all cases to war orders, emphasizing that the supplying of the military should be the first consideration in all production today.

Mr. Boeschenstein spoke as follows:

"A great part of the leaders of this industry today understand the situation, recognize their responsibilities and are facing them squarely. These leaders are willing to bear their full and fair share of whatever sacrifices may be involved, and have rolled up their sleeves and have gone to work on the problem. Donald Nelson has given you a picture of the growing importance of the job this industry faces. All but a very small proportion of the 700,000 items which Mr. Nelson mentioned for operations overseas require packaging either in paper, paperboard or in lumber and all come from the same primary product. In addition, paper is a component part of many essential war materials. In connection with the consumption and production of paper it must be remembered that the use of paper and paperboard increases almost in direct ratio with the increase in total production. The WPB believes that the pulp and paper industry will solve its problems by the same kind of united effort with which American industry has licked many other war production problems.

"The WPB has a responsibility of laying before this industry the facts—(1) What we are trying to do, (2) Why it is necessary and (3) As far as possible, to see that there is an equitable sharing of the load. The problems facing the pulp and paper industry are: (1) to increase the production of raw materials, primarily pulpwood, supplemented by waste paper stock and to do this in spite of manpower and equipment shortages; (2) recognize the long 'in process' cycle with the exception of the South which makes it necessary to bring consumption into balance with production. Consumption must be brought into line with production on the basis of pulpwood supply, because we no longer have more than working inventories to draw on; (3) make sure that critical and most essential paper requirements are taken care of first and in necessary amounts. These are the considerations behind the existing WPB orders and the basis for our policies in establishing essentialities and allocations. All this has been done with the advice and help of capable Industry Committees representing all segments of this industry."

Mr. Boeschenstein gave as an illustration of the increased demands for paper and paperboard the fact that many more V-Boxes must be supplied this year and that the military requirement for waterproofing paper had increased by almost 700% since the last quarter of 1943.

Mr. Boeschenstein said that in an effort to increase production of paper and paperboard, the WPB has obtained the cooperation of the War Food Administration, the War Manpower Commission, the Selective Service, and the Army and we have established closer liaison with the OPA. We can expect better results from this co-operation in the future.

Mr. Boeschenstein stressed the fact that the operation of the entire pulp and paper industry depends upon woods management and woods production. "To accomplish this important job," Mr. Boeschenstein said, "the woods management must have the backing of the executives in the industry. The woods management of this industry has a selling job to do to get the cooperation of local representatives of other government agencies. They need to know the Regional Directors of the War Production Board and of the U. S. Employment Service people and to develop with them a working arrangement.

"In order to increase the pulpwood supply it is necessary to maintain the present woods labor forces, particularly the supervisors. We are getting a tremendous amount of help from farmers and seasonal workers. We have received excellent co-operation from the Provost Marshal General's office in the training of prisoners and a more liberal policy is now in effect regarding the use of prisoners. Prisoners are now being used in New England, the Lake States, and more extensively in the South. The co-operation of the paper companies is necessary in working out some of the practical details in using the prisoners of war."

Mr. Boeschenstein mentioned the recent Texas ice storm which he described as a major disaster but as a possible source of salvaging pulpwood.

"In view of the fact that 90 per cent of the pulpwood moves at least part of the way by truck, it is necessary to sound a word of caution concerning trucks, tires, gasoline and railroad cars. In spite of the excellent co-operation of the Office of Defense Transportation tires will be very tight in the next three months and freight cars short in the South and the Pacific Northwest," Mr. Boeschenstein said.

The WPB is now issuing monthly reports giving facts on production, consumption and inventories broken down by segments of the industry, according to Mr. Boeschenstein. There are also quarterly reports on WPB policies and method of allocation. These are available to the entire industry.

Mr. Boeschenstein said that mills that have supplies of pulpwood will be expected to make grades of pulp most needed within practical limits of their facilities because it is obvious that we must make pulp where we have the pulpwood. At the same time, WPB will expect paper mills and converters to make types of paper most urgently required from the pulp authorized for their use.

Mr. Boeschenstein stressed the point that the paper mills have an obligation to supply the requirements of the Army and Navy and mentioned in this connection twelve items which the Army now required and for which there were no bids.

In conclusion, Mr. Boeschenstein said that the initiative, resourcefulness and teamwork of the pulp and paper industry and the governmental agencies would solve the problems which confront us.

An open conference on pulp and paper controls was held in the Jade Room of the Waldorf-Astoria on the afternoon on February 16, at which the speakers were Rex W. Hovey,

# *Nature is good to makers of* FINE PAPERS

Consider for a moment the war-time situation of makers of fine papers—pulp supply largely curtailed; restrictions on weight of stocks; limitation on brightness of products. All of which would *seem* to contribute to quite a predicament.

In this emergency Nature's goodness to makers of fine papers is revealed in the great store of titanium ore, the base of all TITANOX pigments, deposited in the heart of the Adirondack Mountains. Through this American raw material source, developed by the Titanium Pigment Corporation, titanium pigments are made available which build opacity into even light-weight papers, give extreme whiteness with minimum pigmentation, and provide greater *visual* brightness within authorized limits than do pigments of the yellow-white type.

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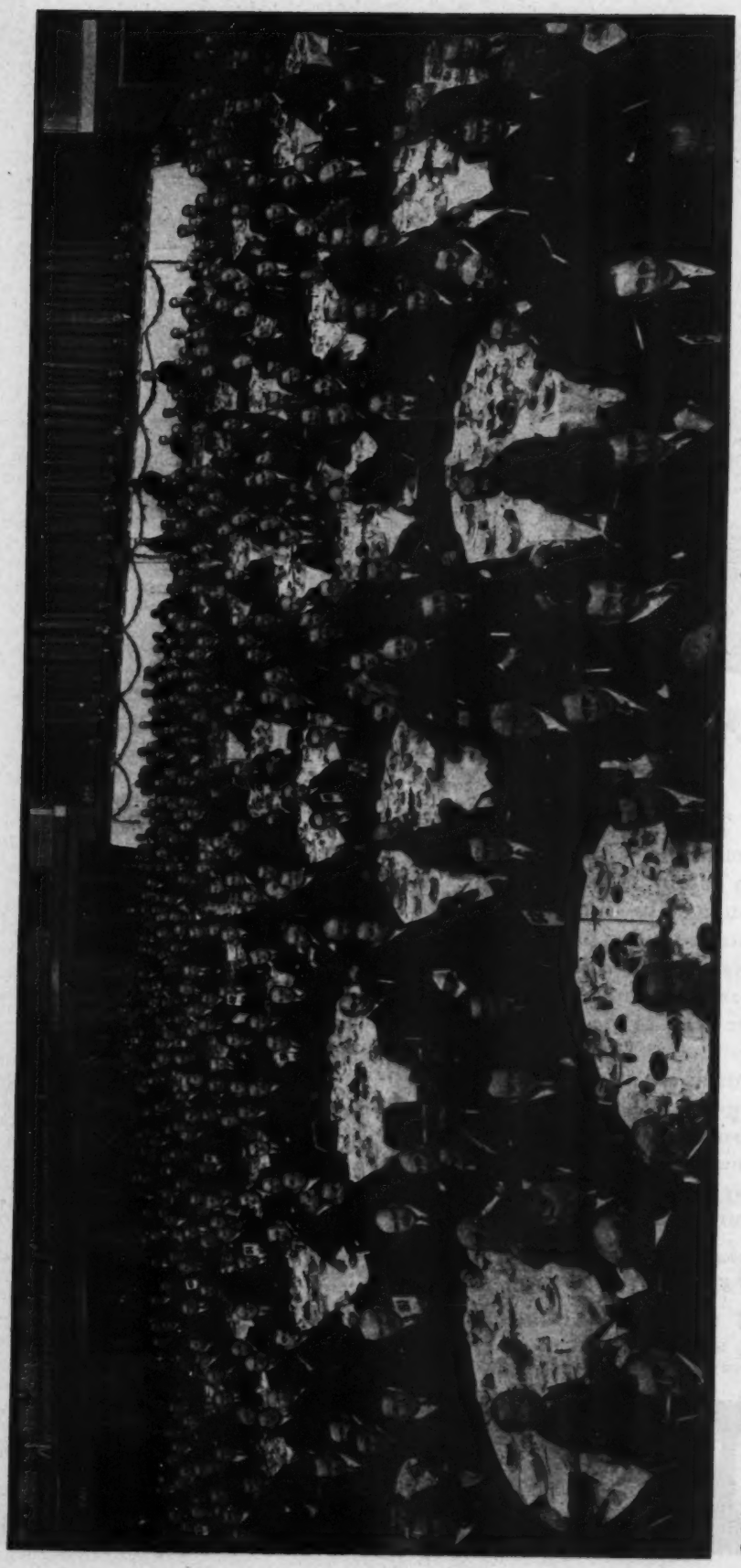

director of the Paper Division of the War Production Board, Washington; James L. Madden, assistant director of the WPB Paper Division and chief of the Pulpwood Section, and David Graham, director of the WPB Office of Pulp Allocation. E. W. Tinker, executive secretary of the American Paper and Pulp Association, presided. Written questions regarding policies, programs and regulations of the War Production Board were answered by the respective speakers following their addresses.

Mr. Hovey stated that "no one in the WPB is even thinking about the end of the war as yet", and declared that Army and Navy requirements must be met more satisfactorily by the paper industry.

"It is to be regretted that so far the industry is not meeting the war requirements in a voluntary way, and they must be met," he said. "No one can think of his private economies at this time. If the Army and Navy do not get the bids when they ask for materials, then they probably will ask the WPB to apply more directives under Conservation Order M-241. If the industry cannot satisfy the Army and Navy needs, then there must be set up

***Highlighting Paper Week was the Luncheon meeting of APPA in the ballroom of the Waldorf-Astoria Hotel, Monday, February 14.***

a system of controls to handle the situation. Civilian requirements must come after the war needs, and all possible means must be utilized to pad out the supply by reducing weights, substitute fibers, more filler and similar means."

Mr. Madden summarized the factors leading to the present severe shortages, asserting that only a total of 16,176,000 cords of pulpwood, including imports from Canada, could be looked for in 1944—a sharp reduction even from the 1943 figure. He stated that the sum of money appropriated to bring labor from outside the Continental United States—mainly for work in the woods—would be a decisive help to the industry. He added that the Provost Marshal had modified the flat 80c per day for war prisoners used for labor, so that those not producing reasonable amounts of work could be cut slightly, and would shortly issue an "incentive" pay plan with pay up to a maximum of $1.20 a day. He said this might result in increased production from the war prisoners used in the woods.

"The three big problems of manpower, transportation and equipment, and prices are being tackled by Government and industry in a co-operative

way and will be worked out adequately," he asserted.

Mr. Madden said in answer to a question from the floor that he trusted it would not be necessary to apply allocations to pulpwood. "We don't want to kill industry's initiative and incentive, but we do want to get what our military services require, first."

Mr. Graham reviewed standards and problems confronting his office in allocating wood pulp, emphasizing that "end-use data is increasingly necessary in determining essentiality to the war effort of the use to which available materials are to be put."

"For the first quarter of 1944 the domestic mills have estimated they will produce 2,568,000 tons of wood pulp. Based on our past experience, however, we know that this figure is too optimistic," he said. "For the first 1944 quarter the WPB has authorized the use of 2,779,000 tons of pulp for the production of paper, paperboard, non-paper products and for export."

The reasons for allocating pulp to partially integrated mills are, Mr. Graham stated, as follows:

a) Such mills do not produce enough pulp to maintain practical minimum operating rates on their paper and paperboard machines.

b) The manufacture of most types of paper and paperboard require the blending of several different types of pulp, only one of which, is, as a rule, produced in a partially integrated mill.

c) Hence, the allocation of additional pulp is a means of maximizing production of pulp and paper, avoiding loss of operating capacity, and securing the desired types of product in the tonnages required.

◆

▶▶▶ A MARKED DEPARTURE in the set-up of the Canadian Pulp and Paper Association is understood to be under consideration by an executive committee elected at the recent annual meeting. It is believed that failure to elect a successor to retiring president E. Howard Smith may be traced to a plan involving the appointment of a salaried president who will serve on a full time basis, rather than having one appointed from executive Association members to act without remuneration.

◆

▶▶▶ THE NATIONAL ASSOCIATION of Manufacturers has issued a manual of preparation for war contract termination to guide its members in dealing with one of the most serious problems all industrialists now have to face. Its significance is indicated by the fact announced in the introduction to the manual, that more contracts have already been terminated than after the last shot in World War I.

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First printing press brought from England to Cambridge, Mass. in 1638. Picture shows Matthew Day, Stephen Day, his father and an Indian called "James Printer." First American Book was printed on this press in 1640.

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RALPH E. BRIGGS, Canton, Mass.
E. R. LELOFF, Vancouver, Wash.

# TAPPI *Looks at* Postwar Horizons

▶▶▶ Thomas Morton once wrote, "Push on—Keep moving." From what TAPPI has done, is doing, and is planning to do, it seems that this thought actually had been accepted by the Association as its motto. Right from the start, TAPPI has been a forward looking organization. It has consistently charted new courses; it has blazed new trails; it has pushed on to new horizons. The theme of the 29th Annual Meeting of the Association held on February 14-17, 1944, at Hotel Commodore, New York City, was "Postwar Horizons." It might be mentioned that the theme of the 1943 Annual Meeting of TAPPI was "Paper Prevents Battlenecks." As brought out in the address of R. A. Hayward, retiring president of the Association, the last three conventions of the Association have been devoted almost exclusively to war problems, and now the Association, again looking forward, has given thought to the postwar situation.

The meeting opened in general session on the morning of February 14 with a brief business meeting before which R. G. Macdonald, secretary-treasurer, presented the secretary's report, R. A. Hayward, the president's address, Norbert L. Cochran, the teller's report, and R. S. Kellogg, the Joint Textbook Committee report. Following this business meeting, the remainder of the session was given over to the presentation of five papers on the postwar subject, two of them by title.

### Annual Report of Secretary Macdonald

In presenting the report of the secretary, Mr. Macdonald mentioned that the Technical Association of the Pulp and Paper Industry devoted 1943 to assisting insofar as possible the Armed Services and other organizations directly engaged in the war effort; that a large number of members joined the Armed Services during the year; that 226 individual members were elected in 1943; that on December 31, 1943, the total individual membership was 1,926; the corporate membership 125; the sustaining membership 110.

He read the names of those members who had passed on during the past year. This list was very extensive and included the following names:

C. M. Baker, consulting engineer; Earl E. Berry, Beloit Iron Works; G. D. Bowne, Westinghouse Electric and Manufacturing Company; C. K. Boyer, Consolidated Water Power and Paper Company; V. S. Denison, Beloit Iron Works; Charles L. Ellis, Downingtown Manufacturing Company; H. K. Ferguson, H. K. Ferguson Company; E. G. Goodell, Stevens Point Pulp and Paper Company; Paul Hodges, Crossett Paper Mills; Guy C. Howard, Marathon Paper Mills; M. B. Mount, consulting engineer; O. F. Neitzke, Hollingsworth & Whitney Company; F. H. Rosencrantz, Combustion Engineering Company; Hugo H. B. Schapiro, Ohio Boxboard Company; Harold R. Telfer, Detroit Sulphite Pulp and Paper Company; Willard Tiffany, U. S. Testing Company; H. C. Webber, Morris Paper Mills; Charles H. Wilson, Esleek Manufacturing Company.

In addition to these names, Mr. Macdonald mentioned the loss of two of the staff members of TAPPI through death; Miss Emily McClory and Miss E. L. Fabriani.

Nine special reports on manufacturing problems, commented Mr. Macdonald, were issued during 1943. The numeral designation and title of each of these reports follow:

No. 328—Heat Balance in Sulphite Digesters

No. 329—Heat Utilization in Sulphite Mills

No. 330—Kraft Paper Drying Rates

No. 331—Roll-Pulp Furnish to Beaters

No. 332—Fuels and Their Application

No. 333—Process Water Used in the Manufacture of Fine Paper

No. 334—Moisture Content Test for Pulp

No. 335—Deinking Old Papers

No. 336—Relation of Sizing to Offset Printing on Uncoated Paper.

Mr. Macdonald called attention to the fall meeting of the Association held at the Palmer House, Chicago, on September 21-24, 1943. In his remarks referring to the Convention, he stated that more than 4,000 registered either for the meeting or the exhibit; that the technical program was devoted largely to Army and Navy problems; that the meeting was the greatest and most successful effort during the War of bringing together all of the important interests concerned with the use of paper in the War effort. Recognition also was given by Mr. Macdonald to A. E. Montgomery of the J. O. Ross Engineering Company, who served as general chairman of the meeting.

Mr. Macdonald further stated that due to War activities, no research projects were directly financed by the Association during the year; but that the Association promoted and obtained funds for a research project on dehydrated food packaging at the New York State Agricultural Experiment Station, Geneva, New York. This project, he said, was closely related to one of the major problems of the U. S. Quartermaster Corps.

Reference also was made by Mr. Macdonald to the various publications of TAPPI and to the activities of the various local sections. The Chicago Professional Paper Group organized in December, 1943, came in for mention under this portion of his report.

Mr. Macdonald further related that for the immediate benefit of the Quartermaster General, the Association held special committee meetings to work out a suitable procedure for determining the water vapor permeability of papers to be used under extreme conditions in export shipments. He also called attention to the high degree of co-operation between the Association and The Institute of Paper Chemistry, mentioning that many papers had been contributed to the Association meetings by the Institute, and that the Association had made financial contributions towards the building fund and the general operation of the Institute.

The report of Mr. Macdonald was concluded with a list of the various TAPPI divisions and committees with the name of the present chairman of each group.

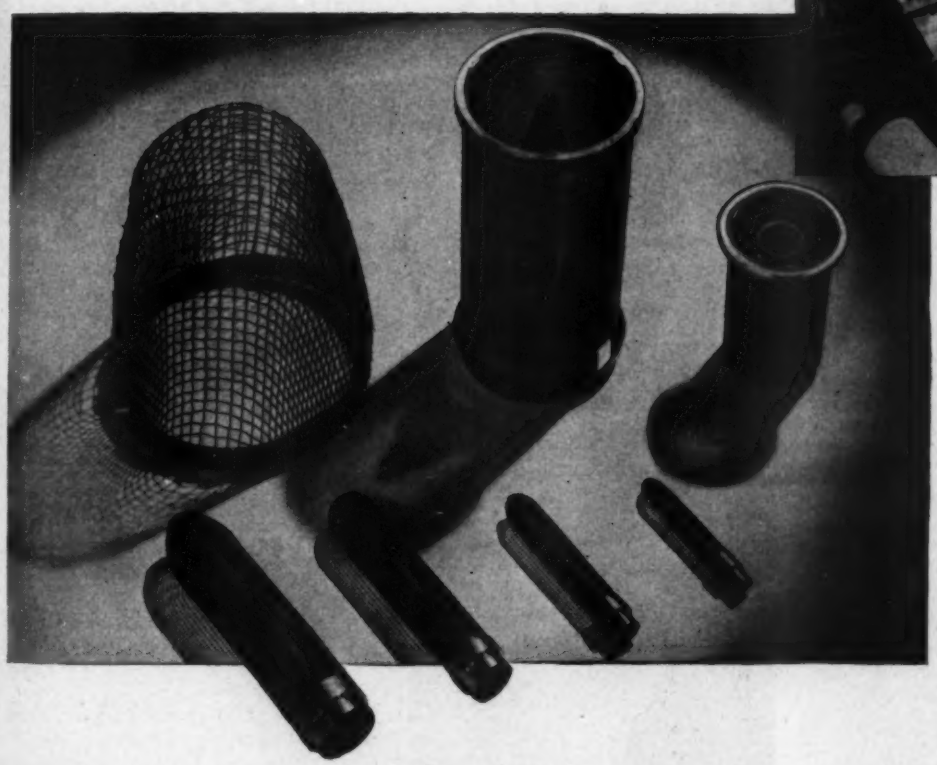
### President's Address

In presenting the president's address, Mr. Hayward mentioned that the pulp and paper industry has developed into one of the major industries of the United States during the past twenty-five years. He added that the growth and services of the Technical Association have paralleled this development of the industry. In the opinion of Mr. Hayward, TAPPI has assisted and led in this development.

Commenting further on the manufacture of paper, Mr. Hayward related that papermaking is one of the oldest industries, but that the rapid technical progress of the last thirty years makes it one of the youngest and most virile industries in our national economy. The War, stated Mr. Hayward, has brought about thousands of new uses for cellulose products, and in the next twenty-five years probably even greater progress will be witnessed than in the past. In the words of Mr. Hayward, "the opportunities for the industry are unlimited."

# Protection Against Breakdowns in Bombers and Pulp Washers...

*Rotary pulp washer with Monel wire cloth cover. For this use, Monel is woven in all commercial weaves, meshes and widths. Photo courtesy of the W. S. Tyler Co., Cleveland, Ohio.*



*Precision made Monel strainers for military and naval aircraft. Some craft have as many as 36 strainers in fuel tank inlets, fuel lines and gas tank outlets. Photo courtesy of Michigan Wire Cloth Co., Detroit, Mich.*

Bombers and pulp washers haven't much in common, yet they are alike in one respect.

Both have essential jobs to do . . . tough, vital jobs that must go on *without interruption!*

In bombers, the use of high octane gasoline presents a problem which resembles one familiar to pulp and paper mills.

Aircraft fuel lines are exposed to the corrosive action of aviation gasoline just as a pulp washer, for example, is at the mercy of acids, alkalies and chemicals found in ground wood and chemical pulps and paper stocks.

The same inherent properties that have made Monel wire cloth invaluable to the paper industry for more than 20 years, also fit it today for service in the fuel lines of combat planes.

Monel may be readily fabricated, welded or silver soldered . . . it is strong, tough and ductile . . . its corrosion-resisting, non-rusting qualities assure durable service and freedom from clogging.

Today all prominent weavers produce Monel wire *cloth* for war requirements and for essential production and maintenance needs where corrosion resistance, strength and rust-immunity are indispensable.

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# MONEL

Mr. Hayward stressed the great responsibility of the Technical Association in the postwar period, and suggested that TAPPI must see to it that the development of the industry is not limited by lack of knowledge and scientific work.

Attention was called by Mr. Hayward to the effort of the executive committee of the Association during the past two years in attempting to consolidate the work of the Association, and in defining its objective. After considerable discussion, Mr. Hayward related that the committee defined the purpose of the organization as "organized for the search and dissemination of knowledge relative to pulp and paper."

In continuing his remarks, Mr. Hayward related that the executive committee had encouraged the development of local sections and has given aid and encouragement to them in the conduct of their programs. The local sections, he added, offer the opportunity for the younger men in the industry to develop themselves. Individual members, he said, should be encouraged to prepare papers and present them at the meetings. He expressed the feeling that this effort on the part of individual members is the best training a man can receive, and offers him the opportunity of developing national recognition. "If I were to make any recommendations for my successors," said Mr. Hayward, "I would suggest that they encourage the local sections to become stronger and more virile organizations, and that they encourage individual members to take an active part in the program."

Mr. Hayward cautioned of the danger in local sections of members depending upon men from without the industry for supplying the programs. Appreciating the need for this educational work, he expressed the thought, however, that such programs will not develop men within the industry as much as though these men accept responsibility themselves for presenting papers to the group.

Much emphasis was given by Mr. Hayward to the need for increasing the central office staff. In part, he said that committee work unquestionably could be greatly assisted if the central office staff was enlarged so that someone could act as secretary for the various committees and could help to coordinate the efforts of the individuals, keep the problems and correspondence alive, and supply the catalytic effort which is so necessary in committee activities.

During the past twenty-five years, continued Mr. Hayward, the Association has accumulated a substantial reserve fund, the income from which is a substantial help in carrying on the current program of the organization. The reserve, he said, is also available to finance new services until they become self-supporting.

Mr. Hayward called attention to the Technical Association Bulletin, started during the past two years, relating that this publication should be continued as a permanent part of the Association program, and here again he mentioned the necessity of enlarging the staff to provide the material for the Bulletin and to carry on its editorial work. In the opinion of Mr. Hayward, the Bulletin during the postwar period can be a means of reporting the work of the committees as well as of the local sections, and to summarize scientific developments of interest to the pulp and paper industry.

Mr. Hayward also called attention to the time and effort given by the Association during the past two years to serving the paperboard and paper converting industries. He suggested that these efforts should be continued, and that wherever necessary committee work should be expanded to serve in these fields.

***Vance P. Edwardes, newly elected president of the Technical Association of the Pulp and Paper Industry.***

One further subject that came up for comment by Mr. Hayward in his president's address, was that of education. He mentioned that there are several educational programs which should be carried on simultaneously; that TAPPI should accept the full responsibility of carrying on such a program that will inform and inspire the men within the industry to develop the technical processes and products. He credited the Superintendents Association with having recognized the opportunity for improving human and industrial relationships of the industry and mentioned that that Association is preparing a program to meet such needs. He also related that the Salesmen's Association has taken definite steps towards organizing a program for developing an acceptance of the entire industry by the public.

In concluding his address, Mr. Hayward expressed his appreciation for the privilege of serving TAPPI as its president, and said that he would be standing by ready to help his successors in any way that he could.

Mr. Cochran in reporting for the tellers' committee, announced the election of the following officers:

*President*—Vance P. Edwardes, sulphite superintendent, International Paper Company, Palmer, New York.

*Vice President*—G. W. E. Nicholson, resident manager, Union Bag and Paper Corporation, Savannah, Georgia.

*Executive Committee* (elected to serve for three years)—F. W. Brainerd, research and development supervisor, Scott Paper Company, Chester, Pennsylvania; Pierre Drewsen, chemical engineer, Hinde & Dauch Paper Company, Sandusky, Ohio; K. P. Geogegan, chemist, Aetna Paper Company, Dayton, Ohio; John C. Nutter, mill manager, Robert Gair Ltd., Toronto, Ontario, Canada.

W. F. Gillespie, technical director, Gaylord Container Corporation, Bogalusa, Louisiana, was appointed for a two-year term to fill the vacancy caused by the passing of Paul Hodges, production manager of the Crossett Paper Mills.

Royal S. Kellogg, of the Newsprint Service Bureau, in presenting the report of the Joint Textbook Committee, mentioned that 871 volumes were sold during 1943. Of this total volume, 250 copies were of Volume V, which deals especially with papermaking problems. The record of sales for the other volumes were as follows: Volume I, 91; Volume II, 94; Volume III, 238; and Volume IV, 198. The total sales of the five volumes to date amount to 36,609 copies.

In commemoration of the twenty-five year record of the Textbook Committee completed last September, Mr. Kellogg related that Robert B. Wolf, manager of the Pulp Division of the Weyerhaeuser Timber Company, wrote a very interesting review of the North American Paper Industry's effort to provide educational facilities for its members. This review, said Mr. Kellogg, has been extensively reproduced in the trade press. *The World's Paper Trade Review*, he continued, in spite of the paper shortage in England, ran the article in its entirety.

Attention was called by Mr. Kellogg to the need for another revision of the

# ROUGH AND READY

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**Need a bridgehead—send the Rangers. Need a fast, thorough, uniform stock processing job—put a cycling system to work.**

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books and that this revision is scheduled for being made as soon as possible after the termination of World War II.

Among the new features of the program were two sessions on Plastics and a session on Bleaching of Mechanical Pulp. Never before in the history of TAPPI has either of these two subjects come up for exclusive sessions. Another novelty was the scheme used for handling a round table discussion of the present straw supply and its relation to the technology of 9-point corrugating. In addition to this round table, several other sessions were given over to round table discussions. There were two such sessions on papermaking before which were highlighted a review and comparison of various pulp testing methods for freeness, physical, and chemical characteristics as well as a comparison of principles of operation and stock characteristics and paper properties produced at various power consumptions from use of various types of stock preparation equipment. A round table discussion of pulp yields followed the presentation of several papers before the Acid Pulping Session. There also was a round table discussion on current problems relating to container testing methods that was part of the Containers and Container Testing program.

In addition, postwar aspects of coating was the subject of a panel discussion presented before the Coating Session. Members of the panel as given by the program, included the following: Werner Kaufman, C. G. Landes, American Cyanamid and Chemical Co.; A. B. Copping, International Paper Co.; J. E. Strasser, Stein, Hall Mfg. Co.; F. W. Egan, John Waldron Corp.; James Masserine and F. A. Weymouth, International Printing Ink Co.; J. F. Halladay, American Coating Mills; D. D. Uong, Fitchburg Paper Co.; J. E. Getty, West Virginia Pulp & Paper Co.; F. H. Frost, S. D. Warren Co.; and E. A. Georgi, Hercules Powder Co.

The novelty of the round table discussion covering the straw supply and technology session was the method employed for developing discussion. A printed form outlined the entire subject in such a way that the discussion took place in a very definite and organized fashion. The form was prepared as would be an outline for the writing of a manuscript. It was divided into eight major parts; namely, gathering problems, shipment, storage, testing of straw as received, possible substitutes for straw, possible means of increasing yields from available materials, methods of evaluating pulp other than by mill runs, and test methods.

## TAPPI Medal Awarded Everest at Luncheon

At the Annual Luncheon on the last day of the Convention and which function brought the 29th Annual Meeting of the Technical Association of the Pulp and Paper Industry Convention to a close, D. Clark Everest, of Marathon Paper Mills Company, Rothschild, Wisconsin, was presented the TAPPI medal award. The presentation was made by Allan Abrams, vice president of Marathon Paper Mills Company and recently Deputy Director, Research and Development Division, Office of Strategic Services, Washington, D. C. Mr. Abrams was president of TAPPI during 1932 and 1933. In making the presentation, Mr. Abrams said that Mr. Everest was the first non-technical man to receive the award. He mentioned Mr. Everest's many continuous years of service with Marathon and related that on three different occasions, he had served as president of the American Paper and Pulp Association. Mr. Abrams also stated that Mr. Everest was a charter member of TAPPI. Mr. Abrams added that Mr. Everest has encouraged research in his own company; and that he was one of the originators of The Institute of Paper Chemistry.

Mr. Everest, in accepting the medal, stated at the outset that he knew of nothing in his business career which had given him more satisfaction than a letter received from Mr. Macdonald, Secretary of TAPPI, advising him that the executive committee of the Association had selected him as the recipient of the award. He expressed deep appreciation for the honor and thanked the members of the committee and of TAPPI for it. Mr. Everest related that other recipients of the award in the past included some of his close personal friends. Of the names mentioned by him, there were Mason, Mahler, Millspaugh, Kress, Wolf, and Fletcher. He said that perhaps of the group, his closest association was with William H. Mason, one of the first medalists, and that this association came about in the development of Masonite and in the organization of the company which eventually became the Masonite Corporation.

In reviewing his years of association with the industry, Mr. Everest mentioned that he was injected into the industry at the age of 16; that in those days, there were no highly specialized jobs and that his own field covered everything including office boy, stock checker, mail clerk, and bookkeeper. Noah Bryant, Frank Milham and John King, well-known pioneers of the papermaking industry of Kalamazoo, gave him, he said, a fundamental knowledge of papermaking which has been invaluable over a long period of years.

"Twenty-nine years ago," he continued, "it was difficult to sell management and operating staffs on the necessity of technical control. If you compare the products of the industry in 1915 with those of today," he continued, "you will find an increase in quality and in use applicable almost in direct proportion to the increase in technicians employed." Mr. Everest further added "I have said time and again that the men and women of TAPPI are the ones who have given management its worst headaches. It has not only been the difficulty of keeping up with one's own technical staff, but in being flexible and versatile enough to keep up with all of the other technical staffs of manufacturers engaged in making similar lines of products."

Further commenting, Mr. Everest said, "I am for men and women with ideas; those who have the courage and determination to work them out and demonstrate their usefulness. I have probably listened to as many crackpot ideas as any of you, but I have always listened. Some of them, through some modification, have developed into real winners."

In concluding his remarks, Mr. Everest stated, "I have faith in this organization to meet whatever problems we may encounter in the postwar period. There are those who will continue to associate in the clear vision of hindsight, but you will go forward to great accomplishments through ideas and in the clear vision of foresight."

Over the four-day period of the meeting the program, including the several sessions and the annual luncheon already mentioned, totaled 21 sessions. These sessions with names of chairmen in order of program presentation, follow:

*First Day*—General Session, R. A. Hayward, Kalamazoo Vegetable Parchment Co.; Viscosity Testing Methods Session, R. S. Hatch, Weyerhaeuser Timber Co.; Straw Supply and Technology Session, Pierre Drewsen, Hinde & Dauch Paper Co.; and Preparation of Non-Fibrous Materials Session, C. M. Connor, Valley Forge Laboratories.

*Second Day*—Papermaking Session, A. E. Bachmann, Missisquoi Corp.; Acid Pulping Session, George H. McGregor, Forest Products Laboratory; Graphic Arts Session, M. S. Kantrowitz, U. S. Government Printing Office; Papermaking Session (Contd.), A. E. Bachmann, Missisquoi Corporation; Alkaline Pulping Session, Kenneth G. Chesley, Crossett Lumber Co.; Coating Session, Werner Kaufmann, Kupfer Bros. Co.

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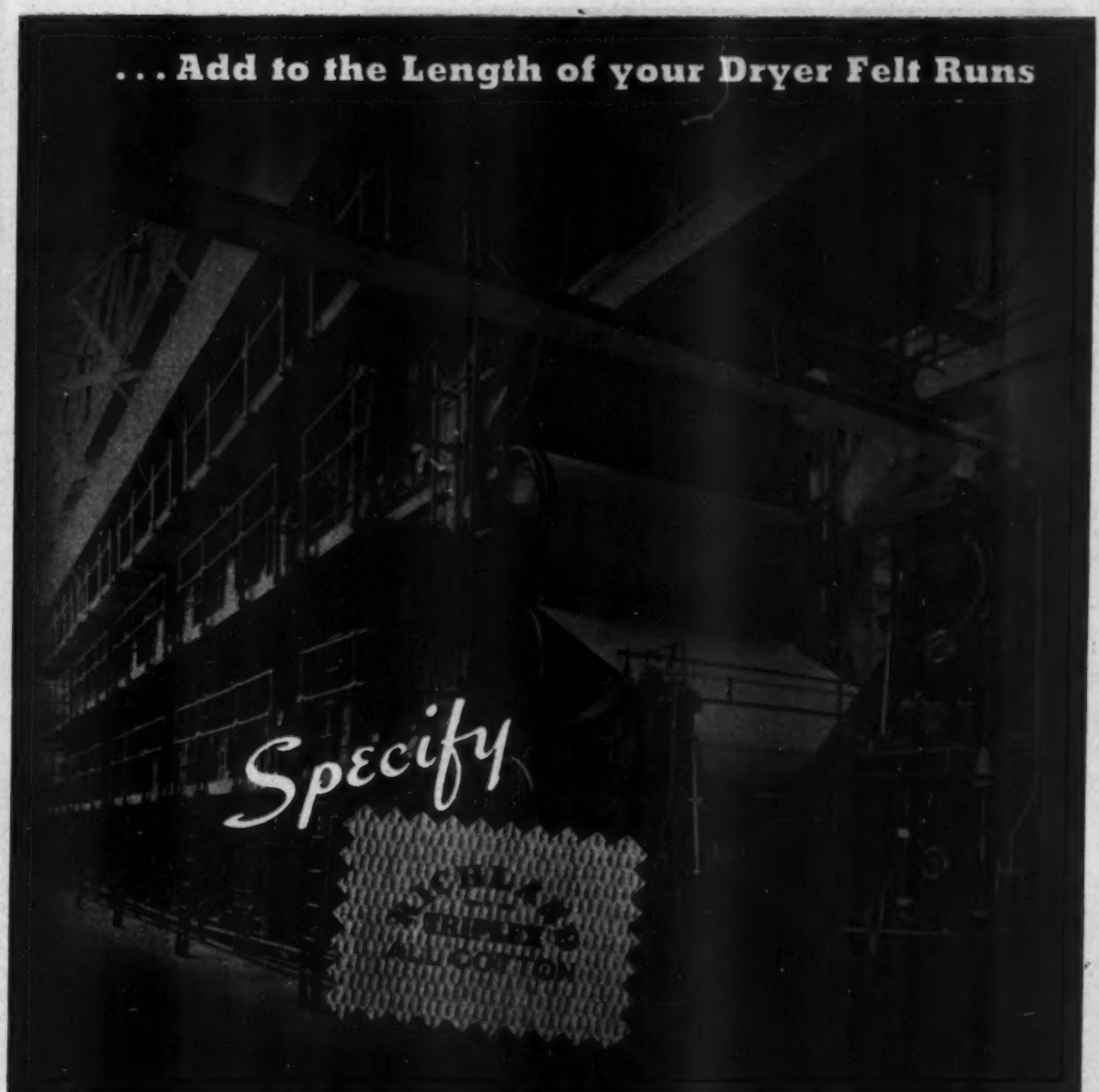


For years the name RICHLAND TRIPLEX has meant to many men in the paper industry, long satisfying, economical dryer felt performance. The reason for this is not difficult to find. First, the strong, highly uniform yarns from which RICHLAND TRIPLEX all cotton dryer felts are made give them those long-wearing properties for which they are so widely known. Their high degree of porosity with minimum amounts of shrinkage and stretch assure low steam consumption and reduce production delays. Next time, specify RICHLAND TRIPLEX and see for yourself.

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*Third Day*—Containers and Container Testing Session, Arno W. Nickerson, Consulting Engineer, and J. D. Malcolmson, Robert Gair Co., Inc.; Engineering Session, W. G. MacNaughton, News Print Service Bureau, and Roderick O'Donoghue, Consulting Engineer; Bacterial Control and Stream Improvement Session, R. W. Torrey, Riegel Paper Corporation, and L. B. Miller, W. H. and L. D. Betz; Water Session, L. B. Miller, W. H. and L. D. Betz; Mechanical Pulping Session (Symposium on the Sodium Peroxide Bleaching of Mechanical Pulps), R. M. Drummond, International Paper Co.; Plastics Session, Alfred J. Stamm, U. S. Forest Products Laboratory.

***Twenty-ninth Annual Luncheon of TAPPI held at the Commodore Hotel on the last day of the Convention.***

*Fourth Day*—Testing and Water Permeability Session, P. F. Welmer, Electrical Testing Laboratories, and W. H. Graebner, Marathon Paper Mills Co.; Fibrous Materials Session, John Traquair, Mead Corporation; Fundamental Research Session, Harry F. Lewis, Institute of Paper Chemistry; Annual Luncheon, R. A. Hayward.

More than 80 technical papers were scheduled for presentation, some of them by title, before the various sessions. "Short-short" condensations of a number of these papers follow:

**An Engineer's Conception of Post War Planning, Milton Jacobs, Charles T. Main Co.**—Commitments should not be made until they are correlated against an over-all program known to produce desired results commensurate with the costs. A comprehensive appraisement of supplies and facilities considering the expected useful life of the major productive units should be made. Development of equipment will be governed to a great extent by the ability to apply improvements to existing machines.

Geographical and physical conditions will govern the productive rate and products which can be made and sold at a profit, and these limitations must be recognized. An assured supply of raw materials is fundamental and productive capacity must not get out of step with these supplies.

Good planning requires the combined and co-ordinated efforts of all persons contributing to a successful operating organization. The most important service an engineer can render today is to correlate pertinent data and information into an over-all picture from which logical and economical plans can be formulated.

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Double-reduction worm gear for vertical drive; the driven shaft may extend up or down.

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De Laval double-reduction worm gears are made in ratios from 50 to 1 up to 8000 to 1.

A rigid cast iron housing maintains the worms and worm gear in perfect alignment, serves as an oil well, protects the working members from dirt and moisture, and eliminates danger to operatives.

There are only three working members, namely, the high-speed worm, the gear with which it engages and which is mounted upon the slow-speed worm, and the slow-speed gear and shaft.

The high-speed gear and the slow-speed worm dip in a reservoir of oil, lubricating all tooth and thread contact surfaces, while the ball bearings supporting both the high-speed and the slow-speed worms are immersed in oil. The slow-speed gear bearings are amply proportioned and effectively lubricated to withstand the considerable forces involved in a high-ratio reduction.

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MANUFACTURERS OF TURBINES . . . STEAM, HYDRAULIC. PUMPS . . . CENTRIFUGAL, CLOGLESS, ROTARY DISPLACEMENT, MOTOR-MOUNTED, MIXED-FLOW, PROPELLER; PRIMING SYSTEMS; CENTRIFUGAL BLOWERS and COMPRESSORS. GEARS WORM, HELICAL and FLEXIBLE COUPLINGS

**Post War Implications Affecting the Paper Industry, Maurice Deutsch, Consulting Engineer** — (1) Substitution of paper for wood, metals, plastics, glass, and other materials for containers and engineering applications of paper; (2) What can paper do to encourage prefabrication of housing for residences and industries?; (3) Application of paper to various military uses such as nonsinkable pontoons, land mines, nonmetallic piping, and tubing; (4) A new credit and insurance system for making possible the replacement of capital and stimulating the employment of labor by the application of property life insurance. Legislation has been passed in New York, Connecticut and Illinois permitting this system. The first charters for American property life insurance companies have been issued in New York and Connecticut. Prominent insurance companies are now prepared to underwrite such insurance in utilities, housing, railroad, and other industries.

**Acid and Basic Methods, Sidney Coppick, New York State College of Forestry**—A comparative study is made of various methods for determining the solution viscosity of wood pulp. These include cuprammonium, cupriethylenediamine, and nitrate viscosities. The molecular magnitude of wood polysaccharide is evaluated from the various solution viscosity data determined at various stages during the purification of wood cellulose.

The results indicate that nitrate viscosities are much more reliable than either of the basic methods for cellulose containing residual lignin.

By suitable calibration the nitrate method for determining the degree of polymerization may be brought into agreement with the TAPPI standard cuprammonium method.

**Viscosity and Molecular Weight —III. The Heterogeneity of Co-efficient, Sidney Coppick, New York State College of Forestry**—Wood pulps are known to be very heterogeneous as regards both the species and chain length of the component polysaccharides. This nonuniformity leads to divergence from both the theoretical and empirical relationships between viscosity, concentration, and infinite dilution functions which appear to be valid for more uniform preparations.

This adds further complications to viscometric methods for the determination of the average molecular weight of commercial wood-pulp cellulose.

The divergence is followed during sulphate pulping. The results indicate that the distribution of chain length changes during pulping in such a manner as to give viscosity relationships similar to those obtained for blends of a number of pulps. These results confirm the "equalizing" effect of pulping which has been reported by others.

Since most commercial pulps may be considered as blends of various proportions of raw and well cooked fibers, these factors are always present and cannot be neglected in the interpretation of viscosity data.

The results indicate that the relationship between viscosity, concentration, and molecular weight must contain a "heterogeneity co-efficient." This quantity is worked out for various degrees of sulphate pulping, and the data indicates that its value is unity solely for well blended, thoroughly cooked or purified pulps. However, with raw cooks the "heterogeneity co-efficient" increases to such an extent as to make viscosity interpretations very accurate if the heterogeneity effect is neglected.

**A Rapid Cupriethylenediamine Viscosity Method for Control Work, R. M. Levy, P. Muffat, W. D. Harrison, Ecusta Paper Corp.**—A procedure has been developed for the rapid determination of the disperse viscosity of cellulose. The solvent used is the relatively stable aqueous cupriethylenediamine. The procedure consists of first subjecting the moist pulp lap to a wet disintegrating process in a disintegrator resembling a continuous beater.

The present method is well adapted to mass production control where many samples are handled daily. The entire test, including all operations in duplicate, can be carried out by unskilled workers in approximately 20 minutes with a degree of reproducibility of 1 per cent or better.

**The Nature of the Cupriethylenediamine Cellulose Solvent, R. M. Levy, and P. Muffat, Ecusta Paper Corp.**—A comprehensive study of the nature of the cupriamine cellulose solvents is presented, with particular reference to cupriethylenediamine. A study of the factors involved in the various complex reactions of this solvent with cellulose is given, together with a complete summary of previous work on this subject. The nature of the solvent as well as the mechanism of reaction of these complex bases is discussed in the light of the experimental results obtained. An attempt was made to bring theory and experimental observations into agreement.

**The Relationship Between Cellulose Viscosities Measured by The TAPPI Standard and the Cupriethylenediamine Method, Alfred J. Corey, Fraser Companies, Ltd.** — Viscosities of a series of bleached sulphite pulps covering a range of high and low viscosities have been measured by the TAPPI standard and the cupriethylenediamine methods. The results obtained by the two methods are compared on the basis of 1% cellulose solutions, and the relationship is shown graphically.

**Special Processes for Coloring Paper, H. A. Lips, E. I. du Pont de Nemours & Co.**—The dyeing of paper with naphthanils, sulphur colors, and vat colors is described.

The naphthanil process may be used to color paper either in the beater or by surface application. A water soluble naphthanil "prepare" is forced by treating the naphthanil with caustic soda. These prepares have a certain degree of affinity for cellulose and will exhaust on the fiber. The addition of a diazotized amine causes a rapid coupling reaction to take place forming a bright color directly on the fiber. Almost a complete range of shades is possible by using naphthanils, but the orange, red, and yellow shades form the bright shades for which these dyes are famous. These colors are suited for dyeing twisted papers used in auto seat covers, paper rugs and woven paper sacks.

Sulphur colors may be beater applied to paper from a solution of the color reduced with sodium sulphide. Formerly the liberation of hydrogen sulphide vapors when the beater was neutralized limited the use of these colors. Today the use of certain heavy metal salts such as zinc chloride and copper sulphate eliminates the odor and neutralizes the excess alkalinity in one operation. Sulphur colors are ideal colors for granite fibers and for dyeing all types of heavy black and brown shades.

Vat colors have the best all around fastness of any group of textile colors. They are usually bright, with outstanding light fastness and are water insoluble. In general, they are fast to chlorine, acids and alkalies. They may be beater applied to paper from an alkaline hydrosulphite reduced solution of the color. This "leuco" exhausts on the cellulose fiber and may be air oxidized to give bright shades of every desired hue.

**The Role of Alumina in the Mechanism of Rosin Sizing, John C. Reid, Mead Corporation** — An investigation of the variables affecting the precipitation of alumina has been carried out with reference to the adsorptive power of the alumina for arsenious oxide. The results of this study were correlated with the ability of precipitated alumina to form colloidal sols and with the ability of the precipitate to develop sizing in a pulp-size system.

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The results of the investigation on precipitated alumina were extended to the development of a method for the formation of colloidal alumina sols, whose activity was studied by their ability to precipitate a colloidal system of oppositely charged particles — namely, Prosize.

The effect of alum, precipitated alumina, and colloidal alumina sols were studied in sizing systems.

The use of colloidal alumina sols has presented a method of studying alumina as an independent variable in the sizing reaction. The results obtained have further clarified several of the problems of the rosin sizing action, and have revealed hitherto unknown factors in the mechanism of rosin sizing.

**The Alumina Content of Rosin-Free Handsheets in Relation to Tub Sizing. B. W. Rowland, Institute of Paper Chemistry, and James J. Harrison, Ohio Box Board Co.**—The addition to a pulp suspension of alumina in the form of aluminum sulphate or of aluminum oxide sol brings about two very different types of results. Certain colloidal aluminum oxide sols, when adsorbed by the fibers, give paper a very good resistance to water penetration, as well as some resistance to oil and ink penetration. If these sols contain even slight amounts of sulphate ion, they have no effect on the water resistance of the sheet. Sheets treated with alum to *p*H 5.5 show no water resistance.

The addition of alum to paper caused very definite decreases in the strength of paper. The addition of the same amount of alumina, as aluminum oxide sol, produced handsheets with properties as good or slightly better than those of sheets without oxide present. Thus, it appears that the electrolyte constituents of aluminum sulphate have a marked deleterious effect on the strength properties of paper.

As the amount of alumina sol addition is increased, the water resistance of the paper increases. In tub sizing with starch, the results indicated that the more alumina sol added to the stock, the higher the water resistance and the smaller the starch effect. All the sheets, regardless of the amount of alumina present, were brought to approximately the same strength in the tub, but the strength increment showed much greater rise with sheets in which the alumina content was low.

The tub sizing experiments of sheets treated with various amounts of alum is independent of any size resistance of the paper, as they were all water-leaf sheets. The sheets upon tub sizing with starch were all brought up to approximately the same strength, regardless of the initial strength. Thus, the sheets with large amounts of alum showed larger strength increases in tub sizing than those with a high initial strength and small amounts of alum.

**Effect of Pulp Cation-Exchange Capacity on Engine Sizing. William S. Wilson, Merrimac Division, Monsanto Chemical Co.** — Seconds sizing is plotted against per cent rosin, and rosin and Mersize combinations for a random group of pulps. A method for the rapid determination of the relative number of bonds on a series of pulps is suggested. This method has been applied to ten of the pulps in the above group and seconds sizing for four amounts of rosin is plotted against the number of pulp bonds.

The resulting curves indicate that the sizeability of a pulp is a function of the number of bonds on the pulp. The results are discussed in the light of the author's ideas on the theory of engine sizing.

**Diatomaceous Pigment in White Patent Coated Solid Manila Board. W. R. Monette, Dicalite Co.**—This paper covers results obtained by use of

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That's a record. From a full to empty chest, a variation of 12 feet, the output of this Warren Pump* was so steady that required tolerance was easily and consistently met. And the sheet was more uniform than obtained with the plunger pump previously used. Records like this are not exceptional. All Warren machine chest pump installations have been notably successful.

* Installation in a large Eastern mill.

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# IN THE 18th CENTURY THERE WAS PAPER SHORTAGE, TOO!

*Illustrations from the Bettman Archive.*

## BUT FEW PEOPLE WERE AWARE OF IT-

THE making of paper was an art then—and only the royal and wealthy could use paper, as it was made by hand, sheet by sheet. The art of paper making developed into an industry, until less than two centuries later tons of paper were produced faster than the early paper makers produced sheets.

From the very first felt layers were used by the early paper makers for removing water from the sheets, by placing the sheets between the layers of felt and pressing out the water. In 1944 felts are just as important to the manufacture of paper. Since 1890 Appleton Felts have met all requirements of paper mill production, year after year—in 1944 the standard for paper mill felts.

*Appleton Woolen Mills*

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diatomaceous pigment in white patent coated solid manila board manufactured on a cylinder machine.

In summarizing results, the following advantages are given as due to use of the diatomaceous pigment: (1) Bulking approximately 3½%, enabling mill to secure desired caliper without increasing weight specifications; (2) A given saving in fiber; (3) Better sheet formation, resulting in a smoother finished and more uniform sheet having better printability; (4) Faster drying, which could be utilized either as a saving in fuel for less steam required, or as a means of increasing production through faster machine speed; (5) Reduced unit production costs; (6) A general trend in improvement of the test.

**Limits of Effect of Acid Concentration—Digester Pressure Relation in Sulphite Pulping, W. F. Holzer, Crown Zellerbach Corp.**—The benefits of more rapid cooking or any of its variations realized by use of high strength acid in the sulphite digester are well known, but the fact that the pressure capability of the digester is the limiting factor of these returns has not been emphasized. For a given pressure and temperature, there is an optimum strength of acid. Above this strength the benefits are lost in relief. Below this strength the chemical cannot take full advantage of the pressure possibilities. At a pressure of 95 pounds and a temperature of 135 C. the optimum strength is in the range of 6.25% free $SO_2$ (7.5% total $SO_2$). Raising the pressure to 110 pounds, raises this optimum to about 7.75% free $SO_2$ (9.0% total $SO_2$). With acids of 10% and over, there appear to be further benefits from penetration. Both from the experimental work and observation of commercial operation, it appears that at 135 to 140 C. a shortening of the cook by 15 minutes can be realized by increasing pressure 5 pounds, provided that the acid strength is adequate to take advantage of the pressure.

**Controlled Hydraulics on Flat Screens for Increased Pulp Production and Quality, H. P. Schenk, William A. Hardy & Sons Co.**—It is the contention of the author that the screen slots are most efficient when they are properly separated since if the slots are too close, the many radial flow forces generated set up too many forces opposed to the more dominant natural gravity forces.

The effect of the water blow-back and air blow-back when the forces dominating the radial flow forces and the gravity forces are reversed by the upstroke of the diaphragm is also considered.

By correct patterning, the slot size and spacing can be so adjusted to better control the hydraulic forces and will result in increased capacity per unit with less water required for the screening process.

**Reducing Pressroom Waste by Supplies Inspection, Jack Beierwaltes, E. J. Kelly Co.**—Much of the spoilage, press downtime, and expense in printing plants are caused by faulty ink, plates, and paper.

By inspection, proofing, tapouts, and drawdowns, inks can be checked for drying on paper, on the press, for crystallization, chalking, picking, transfer and trap, print sharpness, lay, color, and offset.

Printing plates can be checked by thorough inspection, using a magnifying glass, depthometer, type high gauge, a straightedge, a smooth plane surface and a square.

Paper can also be checked to make certain that exactly the same stock which was ordered is delivered.

The testing methods recommended are admittedly not new or original, but they are simple, inexpensive, easy to apply, and can be used with great effectiveness in eliminating waste in printing plants if they are used before production involving the supplies begins. Testing by these methods can be as simple or complex as the production volume and amount of savings to be affected warrants.

**Luminescent Pigments, G. F. A. Stutz, New Jersey Zinc Co.**—Fluorescent pigments are classified as either organic or inorganic. Organic pigments are usually dyes, lakes made from such dyes and metallic salts of dyes, and dye intermediates. They possess high fluorescent brightness and brilliant color, but are subject to fading and loss of fluorescence on exposure to sunlight. Inorganic pigments most used are zinc sulphide and zinc and cadmium sulphide. These are crystalline pigments having white or yellow daylight color, and blue to red fluorescent color.

Phosphorescent pigments are classified as either short afterglow or long afterglow. Zinc sulphide and zinc and cadmium sulphide are the materials having short afterglow. Calcium sulphide and strontium sulphide are the materials having long afterglow. The latter are particularly unstable in the presence of water. All are very coarse, unsuitable for printing inks, and not generally used in paper or printing inks.

The luminescent properties of the fluorescent type of zinc and cadmium sulphides are a function of their crystal structure, thus accounting for their coarse size. They are chemically stable and resist exposure to weather. Vehicles giving best luminescent properties include methacrylates, polystyrene, and vinyls. Fluorescent colors range from blue and green zinc sulphides to yellow, orange and red zinc and cadmium sulphides. The green and yellow pigments have highest fluorescent brightness. In general, they are used at low levels of brightness, 1 to 40 microlamberts. There is a slight afterglow present in all fluorescent pigments and some applications require that this be kept to a minimum.

**The J. R. Booth Stock Preparation System, R. F. Vokes, Dilts Machine Works**—The type and arrangement of equipment is designed for batch operation handling air dry pulps and machine broke for three paper machines producing a wide variety of basis weights and grades of paper.. Centralized remote control of the entire system is geared with a high degree of technical control of the pulp strength developments and the operation is thereby carried out to satisfy a particular set of refining principles established as a prerequisite for successful operation.

Alternate methods of applying this type of system to other physical conditions existing in a mill are described, and the postwar developments expected from research work now in progress to improve this system are elucidated to some extent.

**A Method for Determining the Hydraulic Properties of Woven Wire Mesh Screens, John F. Halladay, American Coating Mills**—A method and apparatus are set forth for evaluating numerically the characteristics of a woven wire mesh screen in its behavior during the "bare wire" phase of formation.

Data covering screens of various meshes, varying percentages of open area, hydraulic heads from 1 to 30 inches and a range of miscellaneous other variables are presented. A correlation between experimental observations and theoretical calculations is graphically presented as a measure of method accuracy and range of applicability of the method.

A correlation curve between hydraulic discharge co-efficients of the screens tested and their percentages of open area is shown. Response of hydraulic discharge co-efficients to temperature differences is touched upon briefly.

**Fundamental Research of Tall Oil and Sulphate Turpentine and Commercial Exploitation of the Results, Torsten K. Hasselstrom, G. & A. Laboratories**—The fundamen-

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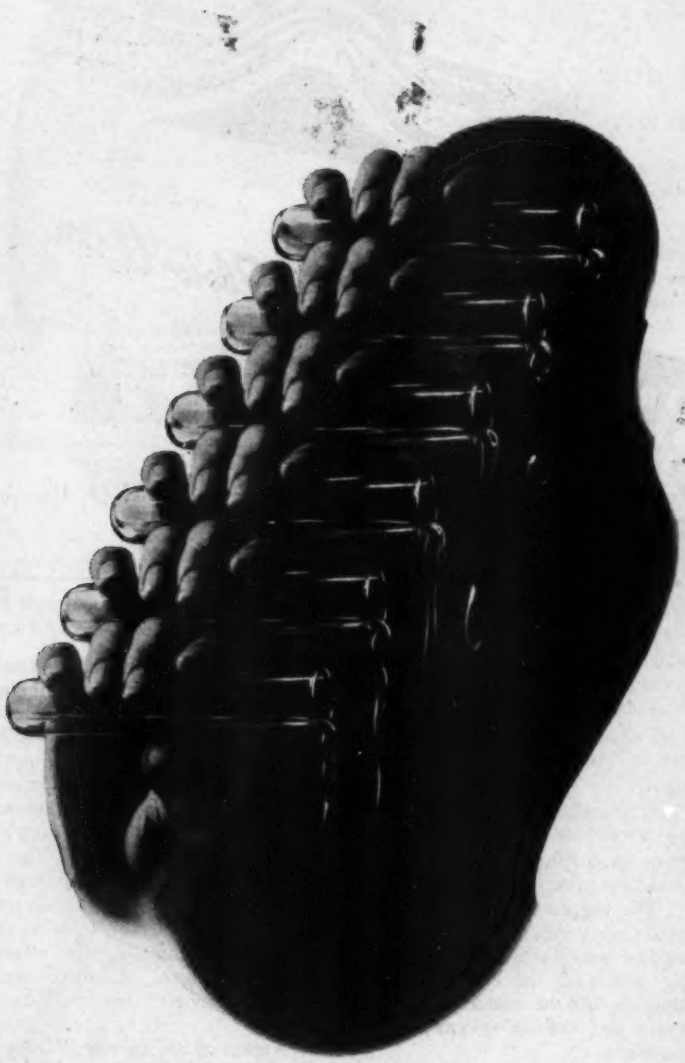

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It should be noted, however, that because most machines and processes present different problems, it is necessary to determine carefully which Methocel type best fits your needs. Before adopting a specific Methocel type, we urge you to refer your problem to the Technical Service and Development Division.

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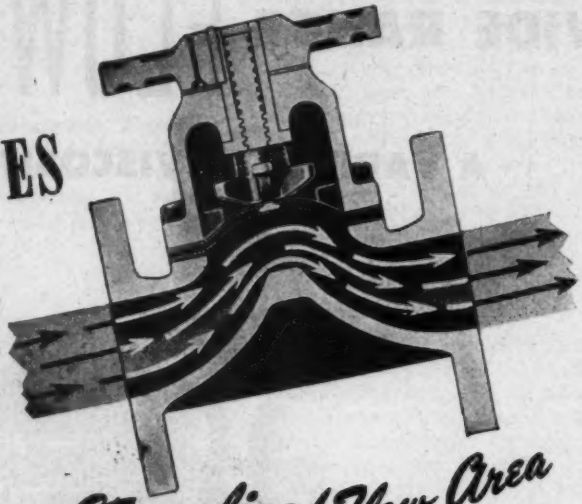

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tal chemistry of both tall oil and sulphate turpentine are discussed and special reference made to the fact that the tall oil resin acids are more uniform in composition than those of rosin, and hence, produce high yields of dehydroabietic acid on disproportionation of hydrogen in the highly unstable abietic acid molecule. Evidence is provided that tall oil is not only an excellent raw material for making of this stable resin acid, but it may also serve as a chemical raw material for making of products now manufactured from coal tar. Crude sulphate turpentine renders itself easily to processes for producing of high grade pine oil and other derivatives of terpenes.

The commercial utilization of tall oil and crude sulphate turpentine as novel chemical raw materials are discussed and the suggestion made that it may be to the advantage of the sulphate pulp industry to develop their by-products along co-operative lines. The establishment of central plants would apparently best permit the industry to capitalize on the potentialities of their by-products.

**Substitutes for Round Pine Wood in Making Alkaline Pulps. Edward H. Hill, North Carolina Pulp Co.**—Laboratory investigations were made by cooking sawmill sawdust of different ages, chip screen rejects, sawmill slabs, shavings, etc., for the purpose of evaluating these materials as substitutes for round logs.

The cooks were made in a small experimental digester with a capacity of approximately 30 pounds of moisture-free chips. The regular mill cooking liquor was used for the cooks and standard TAPPI methods were employed for evaluating the quality of pulp produced from the different materials. The biggest criticism of the pine slabs, chip screen rejects and sawmill sawdust was the dirt content of the pulp produced, the low strength characteristics, and the amount of sand added into the cooking system from these materials.

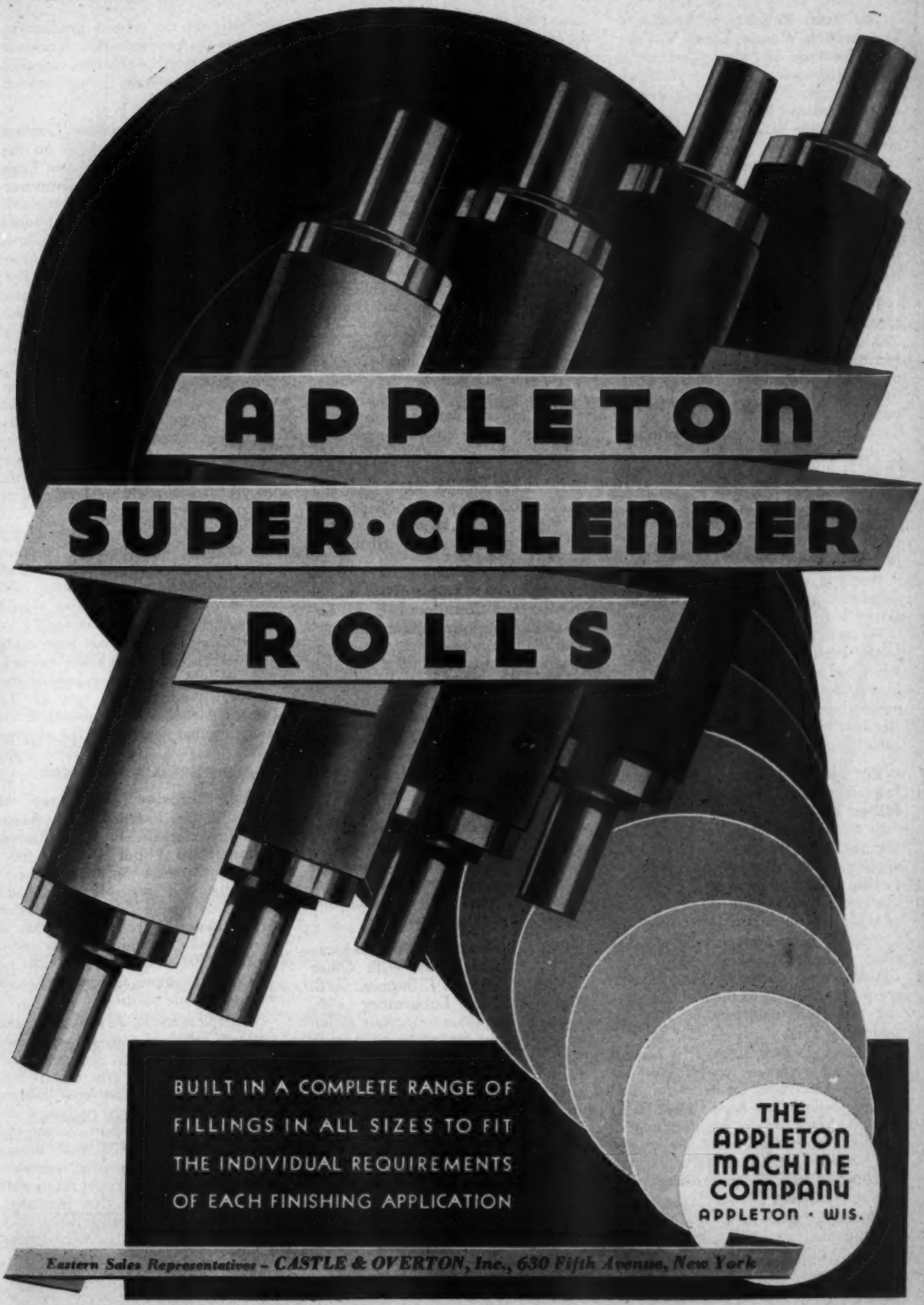
The strength characteristics of the pulp made from pine slabs were about 8.0% lower than the pulp made from pine logs. That made from chip screen rejects was about 14.0% lower and that made from sawmill sawdust was about 40.0% lower than the pulp made from pine logs. It was found that new sawdust gave slightly higher yields and better strength characteristics than sawdust that has been allowed to age.

The quality of the pulp, damage to the equipment and the actual need for raw materials of this kind should be considered by each individual mill before substituting these for round logs.

**The Effect of Small Chip Sizes in Sulphate Pulping. K. G. Chesley, and N. F. Robertson, Crossett Lumber Co.**—Loblolly and shortleaf pine chips from the wood room operation were screened in the laboratory and pulped under one set of conditions with mill liquors in a pilot digester. Four chip sizes were studied: those retained on a 1-inch screen; through 1-inch, retained on ½-inch screen; through ½-inch, retained on ¼-inch screen; and through ¼-inch, retained on ⅛-inch screen. Comparisons of yield and strength characteristics are shown.

The effect of adding rejected chipper fines to laboratory screened chips was also studied. The chips were screened to a definite size ratio and pulped in various proportions with chipper fines retained on and passing through a ⅛-inch screen. The pulps were cooked to permanganate numbers of approximately 20 and 30 by varying the cooking time and per cent active alkali. Comparisons of yield and strength characteristics of these pulps are also shown.

The effect of bark on yield, permanganate number, and strength properties of pulp is discussed.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**The Kraft Pulping of Southern Tannin-Rich Woods, Loren V. Forman, Institute of Paper Chemistry**—The specimens were classified in three groups; those containing tannin in the wood and bark, those with tannin only in the bark, and those having no tannins.

Some of the species which are known to have tannins suitable for leather processing in quantities adequate to permit commercial recovery were found to produce pulp having strength properties similar to normal hardwood kraft pulps.

**The Injection Pulping of Cottonwood with Conductometric Control, Sidney D. Wells, George E. Martin, and D. R. Moltzau, Institute of Paper Chemistry**—The conductivity of a soda cooking liquor was measured throughout the course of a cook and employed as a reliable index of the liquor composition.

By controlled injection of fresh chemical in such a way as to maintain a certain selected range of conductivity values, the active chemical present in a soda cooking liquor was kept practically constant.

Injection cooking with preliminary impregnation affords an appreciable saving in white liquor requirements.

An injection cook with conductometric control gave a lighter colored, easier hydrating pulp, which was 7% higher in bursting strength and 15% higher in tearing strength, than a standard pulp with the same permanganate number.

**Hot Melt Coatings, J. W. Viner, Interchemical Corp., and Bert C. Miller, Bert C. Miller Co.**—The hot melt method has been developed for the processing of paper by means of application of molten plastic materials to base stock at a good speed of production and without the use of solvents or other vehicle carriers for the solids.

The hot melts are generally of two types, those of the high melt range running from 300 to 400 Fahr. to get the proper viscosity of the molten coating and those that may be applied under 300 Fahr.

In the high melt range, it is necessary to use a gravure type of application, in which the fountain and the gravure cylinder are heated to at least 300 to 400 Fahr. to get the proper viscosity for running. The melts under 300 Fahr. can be run on a gravure machine or waxing type machine having an equalizing rod.

Generally speaking, the high temperature melts need smoothing but not cooling, as they have gloss characteristics of their own without chilling, while the melts below 300 Fahr. require both smoothing and chilling for the best results. There are many different formulations to accomplish the various utility purposes required. A proper selection of melt must be made to fit the paper for the purpose intended.

**Coloring Paper and Paperboard with a Modified Aniline Press, J. W. Viner, Interchemical Corp.**—All paper and paperboard manufacturers and converters recognize the economic benefit of being able to carry in their stockroom one base stock of standard weight and color and to be able to color it as the sales demand may arise.

The machine used to accomplish this consists of a combination rubber roller coloring unit of the familiar aniline press design followed by a rotogravure unit with a doctor blade attachment. The coloring and rotogravure units are combined in one frame and are followed by a separate drying unit in line. Both dye and pigment colors may be used dependent on the specifications of a particular order. They are nontoxic and there is no fire hazard.

**Bituminous Emulsions in V Boards and Containers, E. M. Lorenzini, American Bitumels Co.**—Both the history and some of the technical aspects of bituminous emulsion sizing are briefly discussed. Practical advantages in multicylinder machine operations and in finished product results are also reviewed presenting theory of water resistance and wet strength. Performance data on production runs of weatherproof V boards and boxes are presented with a discussion of comparative efficiencies of sizing and wet strength.

A brief description of the use and advantages of emulsified bitumen as an extender for weatherproof laminating adhesives, is also presented.

**Potentialities of Paper Base Laminates as Compared With Other Laminates, Alfred J. Stamm, U. S. Forest Products Laboratory**—Plastics should continue to increase in importance in the coming postwar era as they have during the war period. Of the different types of plastics, the laminates might be predicted to have the rosiest future. Through laminates, plastics have the best chance of outgrowing the gadget stage and finding a place for themselves in structural and semi-structural applications of industrial importance. Fortunately, the field of laminates is the one in which paper shows the best potentialities.

Perhaps the biggest advantage of paper base plastics lies in the relative cheapness and availability of the base material and the relative productivity of paper machine equipment in contrast to the weaving equipment required for a number of the other laminate bases.

**The Effect of Moisture Content of the Impregnated Sheet on the Physical Properties of Paper Base Plastics, A. H. Croup, Hammermill Paper Co.**—Papers impregnated with phenolic resin were conditioned at seven different relative humidities ranging from 9 to 94.5 per cent prior to laminating. Tests on tensile, flexural, water absorption, dimensional stability, specific gravity, and abrasion were made on the laminated material and correlated against the moisture content of the impregnated paper. In general, it was found that as the moisture content increased, the tensile and flexural strengths decreased, water absorption increased, dimensional stability became poorer, impact strength was slightly improved, and that specific gravity and abrasive resistance were unchanged.

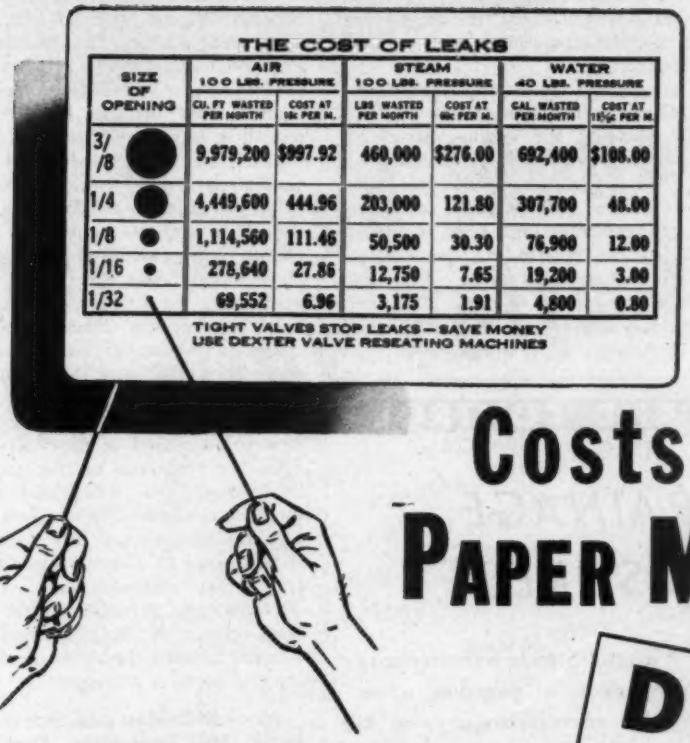
Therefore, if the paper base plastic is designed for structural purposes where strength and uniformity are of major importance, the moisture content of the impregnated paper should be carefully controlled.

Although tests have not been made on other strength properties as compression and sheer or on any of the electrical properties, in view of the foregoing work, it is a reasonable assumption that moisture in the impregnated sheet will also affect these properties and should be investigated.

**The Abrasive Resistance of Paper Base Plastics and Associated Materials, E. R. Hoffman, Hammermill Paper Co.**—A thorough investigation was made to determine the best available means and method of testing paper base plastics for abrasion. A brief description is given of the abrasion machine used. Also, an abrasion scale comparing some of the more familiar materials with paper base plastics.

A graph is shown demonstrating the constant value of abrasion resistance for paper base plastic specimens seasoned up to 75 per cent relative humidity. Above 75 per cent relative humidity the abrasion resistance decreases. A study of resin content and paper thickness proved these factors to have no effect on abrasion resistance. Various types and makes of resins were investigated showing that thermosetting resins have generally better abrasion resistance than thermoplastic resins.

Improvements in abrasion of paper base plastics as large as 80 per cent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CU. FT WASTED PER MONTH
COST AT 10c PER M.
STEAM 100 LBS. PRESSURE
LBS WASTED PER MONTH
COST AT 60c PER M.
WATER 40 LBS. PRESSURE
GAL. WASTED PER MONTH
COST AT 15½c PER M.
3/8 9,979,200 $997.92 460,000 $276.00 692,400 $108.00
1/4 4,449,600 444.96 203,000 121.80 307,700 48.00
1/8 1,114,560 111.46 50,500 30.30 76,900 12.00
1/16 278,640 27.86 12,750 7.65 19,200 3.00
1/32 69,552 6.96 3,175 1.91 4,800 0.80
TIGHT VALVES STOP LEAKS—SAVE MONEY
USE DEXTER VALVE RESEATING MACHINES

# Wire Drawing Costs Money in PAPER MILL Valves

That small valve leak opening — the equivalent of a $\frac{1}{32}$-inch hole, for example — can cause big losses in steam, air or water; and in certain process lines a small leak may be really serious. Unless the leak is repaired promptly, it will grow in size until a complete overhaul or a new valve is needed.

## Reseat Early, the Low-Cost Dexter Way

The only sensible way to stop "wire drawing" and leak losses is to reseat the valve, in the early stages, right on the line, with Dexter Valve Reseating Equipment. No new parts will be needed, little time will be lost, and the labor cost will be negligible.

Tell us about your leaky valves. We'll tell you the Dexter equipment needed to stop your troubles — permanently.

**THE LEAVITT MACHINE COMPANY**
ORANGE, MASSACHUSETTS

have been produced by the use of additional agents in the resins for impregnating. The report is concluded with the results obtained from the study of a number of sulphite papers.

**The Fundamentals of Asbestos Friction Materials, R. T. Halstead, Johns-Manville Co.**—The relationship between friction material; i.e., brake lining or blocks or clutch facings, and the metal surface against which such materials engage under service conditions is discussed.

The various types of commercial friction materials on the market today are catalogued and classified in terms of the general construction or type of composition represented by each kind of product.

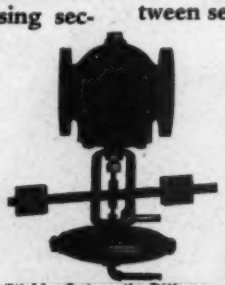
In a general discussion of raw materials used in the manufacture of friction elements, the various classes of ingredients employed are enumerated with an explanation of the role each plays. Since asbestos fibers constitute the preponderant ingredient, a discussion of the outstanding qualities of this raw material is given. Also, the role of the binder, of metal and other secondary additions to the friction material formulation is discussed.


STICKLE DRAINAGE AND CONTROL

CORRECT DRAINAGE AT ALL PRESSURES*

● Every paper man knows that correct drainage is essential to proper drying of paper. Sluggish drainage effects quality and is reflected particularly in a reduced volume of production.

Correct drainage for a paper machine must take into consideration both the amount of steam required in the condensing section and the drop in pressure between sections. Obviously, the correct drainage method cannot be predicated upon one pressure but must work with varying pressure in the driers and with the differential between sections.



Stickle Automatic Differential Valve—the heart of the Stickle System for Paper mills.

With the Stickle System the required drop in pressure necessary for correct drainage at all drying pressures is automatically maintained. The correct amount of steam required in the condensing section is automatically admitted and the differential between sections required for circulation is maintained. The deficiency required for the condensing driers is made up and the correct differential for efficient drier drainage is maintained regardless of pressure demand upon the driers.

*This is one of many advantages that has made Stickle Drainage and Control System the choice of the paper industry. Among other advantages afforded by the complete Stickle System are: Stabilized Steam Flow; Close Control of Moisture Content; Uniform Drying at a pre-determined moisture content; Visible Operation of each syphon; Improved Quality of product; Economy of Steam—greater tonnage in ratio to steam used; Increased Boiler Capacity; Reduced Fuel Costs; and Higher Production Capacity—increased speed of machines.

Stickle

STEAM SPECIALTIES COMPANY

2225 VALLEY AVENUE • INDIANAPOLIS, INDIANA

FOR 40 YEARS REDUCING STEAM COSTS IN PAPER MILLS


**The Mechanism of Flow of Paper Stock in Pipes, John L. Gray, J. A. Van den Akker, The Institute of Paper Chemistry**—Previous work at the Institute on surface friction of stock against solid surfaces has been extended to higher velocities and higher consistencies through the use of larger scale equipment. Two regimes of flow exist—viz., one in which "plug flow" always occurs, and another in which either "instantaneous plug flow" or "equilibrium" flow takes place. For a given pulp, the differentiation between these two regimes depends upon the consistency of the pulp; above a critical consistency, and at velocities above a critical value, freshly mixed stock displays the instantaneous type of flow for a period of time depending upon the properties of the stock and the velocity; after this period of time the flow spontaneously transfers to the equilibrium class of flow, which is characterized by a much lower surface friction and associated with a visually different type of motion of the stock. Data relating to the phenomenon are presented, and a theory of the flow of stock in pipes is presented.

**Modern Design and Streamlined Paper Mill Production, Kurt Wandel, Consulting Engineer**—Stress is laid on the point that only a combination of equipment with proper arrangement and layout will bring results toward greater output, lower costs and a wider range of papers. For a new installation, all equipment arranged compactly on a single floor level is described and recommended as carried out in a mill now running three years. In this mill, all stock enters at one point through a pulper; and goes into the paper machine within a space of 50 feet. Chemicals are fed continuously. The paper machine is built entirely of welded steel, including two 10-foot diameter Yankee dryers which do all the drying for a speed of 1,200 fpm. Automatic controls simplify operations. The machine tender takes charge of stock preparation. Closed system for water is established. Changes in existing mills are recommended for streamlined production on basis of results obtained in the modern mill described. Opportunity is pointed out for greater effect in revamping older installations by abandoning entire dryer sections in favor of two or three Yankee dryers for a great number of papers.

**Power Load on Calenders of Newsprint Machines, W. G. MacNaughton, News Print Service Bureau**—Data are given of the power required to drive the calenders of twenty newsprint machines ranging in

# They Saved Money by Throwing Felts Away

There comes a point in every dryer felt's life when it begins to waste more money than its replacement involves. When its fibres lose their resilience and capillary attraction for moisture, the felt becomes waterlogged and inefficient.

A good example is the recent report from one mill which states that they found it possible to make a material saving in steam cost alone by discarding old dead felts with glazed-over and clogged weave, and installing new HOOPERWOOD Cotton Dryer Felts—enough saving in steam alone to pay for a new felt every week—not to mention the material increase in drying capacity and consequent greater production.

This is only one of many cases where progressive mills, today, are saving money, not by "stretching the life" of old felts, but rather by replacing them as soon as their drying efficiency begins to fall off. It is just plain good business.

Are your dryer felts costing too much per ton of production? We will be glad to discuss the problem with you and help you select the HOOPERWOOD Felt best suited to your requirements.

**WM. E. HOOPER & SONS COMPANY**

PHILADELPHIA, PENNSYLVANIA

Since 1800

**HOOPERWOOD DRYER FELTS**

speed from 1,100 to 1,345 fpm. On these machines the weight of all the calender rolls ranges from 534 to 757 pounds per inch of roll face and the power load is between 0.256 and 0.410 kw. per inch width.

A graph is given showing that the load increased from 0.171 to 0.373 kw. per inch as the speed of a given machine increased from 745 to 1,300 fpm. For each per cent increase in speed the load increase is 1.58 per cent.

**Experiences of a Paper Mill in Bacteriological Control. George M. Suydam, and Ruth R. McConky, Riegel Paper Corp.**—The first step in instituting bacteriological control in this particular paper mill producing food container papers consisted of a thorough investigation of the existing bacterial conditions throughout the mill. The water supply was found to need further treatment in addition to sedimentation and filtration. Chlorination was started, and later ammoniation was added. With the advent of break-point chlorination, this treatment was found to give the most desirous results in supplying low count water throughout the mill.

The preliminary investigation also showed that the original counts of the pulps used were low and that they remained low due to the bleaching process and the addition of chemicals. However, broke and starch were found to develop high bacterial counts and special precautions were necessary in their handling. Satisfactorily covering broke chests, together with the addition of alum to lower the *p*H to 4.2 eliminated contamination from this source. The best method devised to prevent the development of bacteria in the starch solutions consisted of the preparation of only small batches of chlorinated starch for immediate use.

**A Filter Pump-Operated Automatic White Water Sampler, Elliott G. Heslop, Provincial Paper Mills**—A new type of automatic white water sampler is described which is capable of lifting the sample several feet out of a sewer. The power is provided by a laboratory filter pump and the materials used are those which can readily be obtained in any mill.

**A Study of Methods of Slime Control. John W. Appling, Institute of Paper Chemistry**—The Biological Control Committee of the A.P.P.A. sponsored the sending of a slime control questionnaire to 43 paper and pulp mills scattered throughout the United States. There were 34 responses or 79.1 per cent. The results showed a general prevalence of slime with effective control in 76.5 per cent of the cases. The effective slime control agents in decreasing order of frequency cited were: Chloramine (chlorine and ammonia), chlorine, Merfenel, Nalco 21, Nalco 23, Lignasan, Santobrite, and copper sulphate. On the other hand, each of these materials was reported at least once as having been effective during its initial use but as having become less effective upon continued use.

**Pros and Cons Regarding the Recovery of Fibers from White Water. Karl Fries, and J. D. Gaffney, Rhinelander Paper Co.**—This study covers a microscopic survey of white waters of different grades from the different paper machines and from the various steps of operation in the pulp mill.

It was found that white waters from free sheets of paper contain more ray cells than those from slow sheets. The ray cells contain pitch, and when the fibers are recovered from the white waters, discrimination has to be used in determining reuse or disposal of the recovered fibers, depending on the amount of ray cells present.

Pulp mill white waters from the thickeners, deckers and wet machines are rich in pitch carrying ray cells. If for reasons of water economy white water has to be recirculated in the pulp mill, the fibers should be separated from the water before it goes back into the stock system. Failure to do this will result in accumulation of ray cells in the white water and in feeding them back into the stock. The final outcome of this condition will be pitch trouble in the paper mill.

**Resinous Ion Exchange Application. E. R. Mueller, Resinous Products & Chemical Co.**—The development of synthetic ion exchange resins has made commercially feasible the most recent advance in water conditioning, that of deionization. Initiated by the work carried out by Adams and Holmes in 1935, resinous anion adsorbents were developed that permitted the complete and efficient removal of acids. Thus, when used in conjunction with the hydrogen derivative of a resinous cation exchanger, complete removal of ionizable salts, deionization, is effected.

Since deionized water will generally meet U. S. P. specifications for single distilled water (typical analyses are shown), it has already found widespread use in industrial applications, or wherever a water with the quality of distilled is required. Costs of installation and operation of deionizing equipment are well below those for distillation.

**Demineralization of Water by Ion-Exchange: The Ionac Four-Bed System. W. E. Manring, American Cyanamid & Chemical Co.**—Preliminary considerations in this paper deal with the physical and chemical nature of two relatively new ion active materials. Ionac C-284, the cation exchange resin, is a complex condensate in which sulphonic groups are bound as the active exchange agents, and Ionac A-293, the anion-active resin, is an amine resin insolubilized with melamine. Applied to the problem of demineralizing water, Ionac C-284 functions as an agent to exchange hydrogen for dissolved cations and Ionac A-293 to absorb the acids so formed.

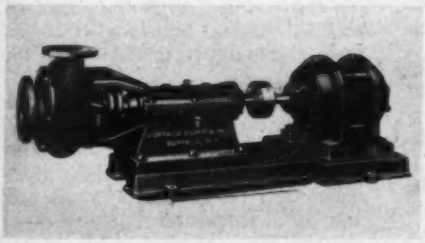
The behavior of the two-bed Ionac C-284: Ionac A-293 system for demineralizing water is described in terms of *p*H, resistance, and solids content of effluent, rinse water requirements, and quantity of effluent water meeting an arbitrarily selected standard. The behavior of the four-bed Ionac system made up of alternate cation and anion beds, with the fourth bed buffered to yield a neutral effluent, is established, and the performance of such a system compared to that of the Ionac two-bed system.

Another application of timely interest is the development of a portable unit, employing a disposable paperboard cartridge as the container for the four beds of Ionac resins. The construction and performance of the cartridge unit with various influent waters is discussed. A further adaptation of the four-bed principle to a self-contained laboratory unit delivering up to 30 gallons per hour is also described.

**Sodium Peroxide Bleaching of Mechanical Pulps — (General Description of the Bleaching Process). J. S. Reichert, E. I. du Pont de Nemours & Co., Inc.**—In connection with postwar planning in the pulp and paper industry, a considerable interest has developed in the sodium peroxide process for bleaching mechanical pulps. This process is still in the development stage and the status report given in this paper should be considered as preliminary in nature and indicative of trends. The outlook on the availability of sodium peroxide for pulp bleaching is not favorable for the duration.

Development work on the sodium peroxide bleaching of mechanical pulps has shown that substantial increases in pulp brightness are obtainable with practically no weight loss at a cost well within economic limits. The bleached pulp retains most of the desirable properties of unbleached groundwood and some new valuable pulp characteristics are developed in the bleaching treat-

# Fussy? Sure, It's Part of His Job!



"Buffalo" Full Ball-Bearing Paper Stock Pumps are skillfully designed and built to handle the varying requirements of the paper mill. A special feature is the shock-resisting, non-clogging impellers which can take the jolts of sudden stock consistency changes without damage. These, and other features are fully explained in Bulletin 953-D.

• You might call this "Buffalo" craftsman fussy, watching with an eagle eye over the machining of a "Buffalo" Pump casting. Actually, he's just painstakingly practical—and that is part and parcel of the "Buffalo" tradition.

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ment. Paper mill operations have shown that the bleached pulp can be used to advantage in the production of a wide range of papers.

The process includes three principal operations: (1) rapid and thorough mixing of the sodium peroxide bleaching solution with the pulp in controlled proportions, (2) storing the treated pulp long enough to permit the bleaching to go to completion, and (3) mixing the bleached pulp with a neutralizing and reducing agent, preferably sulphite cooking acid. The equipment consists essentially of tanks and pumps with connecting lines, mixers and agitators, and control instruments.

This paper describes typical equipment (design, structural materials and layout) for operating the process under the conditions now considered the most favorable; it includes also information on the chemicals, operations, yields, costs, control tests, and effects of variables.

**Stain Reaction of Unbleached and Bleached Groundwood Pulps, John H. Graff, Institute of Paper Chemistry**—Unbleached and peroxide-bleached groundwood pulps show distinct fluorescent color differentiations with ultraviolet light. The Loften-Merritt stain gives distinct color differentiations between the two types of groundwood, so that microscopic analyses of mixtures of these two pulps can be carried out with a reasonable degree of accuracy.

For commercially peroxide-bleached groundwood, these differentiations appear to hold good for many months after the groundwood has been bleached.

**Sodium Peroxide Bleaching of Mechanical Pulps—Effect of Varying the Composition of the Bleaching Solution, J. S. Reichert, D. J. Campbell, R. A. Secord, E. I. du Pont de Nemours & Co., Inc.**—The chemicals used in the sodium peroxide bleaching of mechanical pulps include sodium peroxide, sodium silicate, and sulphuric acid. An investigation is now in progress with the objective of determining the conditions under which the bleaching treatment should be applied for best results. This paper presents the results obtained to date; the investigational work will have to be extended to provide a complete picture. Some of the variables have proven to be interrelated; in some instances a change in one variable necessitates a change in one or more other variables.

Brightness increases obtained in the bleaching treatment increase with the percentage of sodium peroxide used in the treatment. With 2 per cent sodium peroxide the pulp brightness increases from a starting brightness of 58 to 61 to a bleached brightness of 68 to 71, an average increase of 10 points.

In the range of 3 to 7 per cent pulp consistency, the brightness increases obtained in the bleaching treatment shows a progressive increase with the pulp consistency.

The bleaching time varies with the pulp consistency, the bleaching temperature, and the percentage of sodium peroxide used in the bleaching treatment; at a consistency of 5 per cent and at a temperature of 90 Fahr. a time of five to six hours is required for bleaching with 2 per cent sodium peroxide.

The amount of total alkali present during the bleaching treatment has a very marked effect on the bleaching results. Proper proportioning of the chemicals in the preparation of the bleaching solution and also proper proportioning of the pulp with the bleaching solution are required. When bleaching with 2 per cent sodium peroxide at a consistency of 5 per cent and a temperature of 90 Fahr. the best bleaching results were obtained when the chemicals were used in the following amounts: 2 per cent sodium peroxide, 4 to 5 per cent sodium silicate,

# MASONEILAN CONTROLS

## *help the paper industry to keep producing*

Plant engineers throughout the country agree that Masoneilan control equipment helps the paper industry keep producing. They know from experience that the reliability, simplicity and accurate operation of Masoneilan equipment enable operators to produce more paper with less waste and rejects.

Today, most of Mason-Neilan's production is being used for winning the war. However, after the final victory, Masoneilan control equipment, from simple pressure regulators, indicators and recorders to complete digestor controls, will again be available and will help paper makers to operate at peak production capacity.

*For Victory — Keep Buying Bonds*

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and 1.7 per cent sulphuric acid on the weight of the pulp (moisture-free basis).

**Sodium Peroxide Bleaching of Mechanical Pulps — Control of Metal Catalysts in the Bleaching Operation. J. S. Reichert, D. J. Campbell, and R. T. Mills, E. I. du Pont de Nemours & Co., Inc.**— In the bleaching of mechanical pulps with sodium peroxide, small amounts of iron, copper, and manganese are usually present in the wood and in the mill waters. These metals may be present in an active form or they may be chemically combined with other constituents of the wood or mill waters in an inactive form. The traces of catalytic metals in the wood are comparatively inactive, probably because they are tied up as undissociated salts of complex organic acids. However, the metals present in the mill waters are likely to be more active catalytically, and, therefore, may be expected to have an adverse effect on the bleaching results unless steps are taken to deactivate them.

Magnesium salts are known to have a profound stabilizing effect on alkaline peroxide solutions, especially in the presence of sodium silicate. This stabilizing action, which is based on the deactivation of the catalytic metals by the magnesium salts, is being applied to advantage in many commercial applications of alkaline peroxides.

Considerable information has been developed on the effectiveness of magnesium sulphate for controlling the catalytic activity of iron, copper, and manganese salts in the groundwood bleaching process. Losses of active oxygen from the sodium peroxide bleaching solution are reduced to a point where they are negligible, by the addition of a small amount of magnesium sulphate. When appreciable amounts of heavy metals are present in the pulp slurry, the bleaching results are improved by adding a small amount of magnesium sulphate to the pulp before applying the bleaching treatment.

**Machinery Used in Bleaching of Groundwood. E. V. Ullman, Sandy Hill Iron & Brass Works**—The physical properties of groundwood pulp are well known, and with the new du Pont Solozone system, it is possible to bleach mechanical pulp economically.

Continuous bleaching is to be preferred because of simplicity, smaller space, and easier supervision. The output will be more even, and the peaks in water and power consumption eliminated. Even flow and consistency is desired as is thorough mixing, ample storage time, sufficient agitation, further uninterrupted transportation and reliable material and machinery. The mixing can be done by rotating agitators, horizontal screws, or circulation pumps. The latter is preferable, because of smaller surface, less power consumption and maximum efficiency.

In continuous systems, towers are utilized, instead of chests. The bottom of the tower is designed to give a maximum agitation and mix the entering pulp with that already in the tower. For larger volumes, more towers will be placed in series. The chemicals should be added into the bottom of the tower just before the circulation pump. The stock moves upwards in a spiral, which maintains a certain turbulence all the way through.

For a discontinuous operation, batch bleachers of modern design are used with circulating pumps. Modern filters work on the principle of squeezing the water out, instead of sucking it. Pressure filters, simplex and duplex, are shown in photographs. By adding fresh water into the bottom the filters act as washing machines.

The pulp is stored in ample storage chests, built up to 70,000 cubic feet volume. The power consumption is reduced to a minimum by modern circulating pumps.

A diagram is shown of a modern bleaching plant using the Solozone system, as well as the design of the plant. The space required is amazingly small, 70 foot by 70 foot ground area.

**Use of Synthetic Resins in Papermaking. William Abramowitz, John Y. L. Kao, Ashworth N. Stull, Robert W. Worden, American Resinous Chemicals Corp.**—The utilization of synthetic resins may be grouped broadly under three functions: Coating, lamination, and impregnation. The paper discusses the role of resin solutions, hot melts, emulsions and dispersions under each of the three functions. Specific industrial uses and problems are outlined and the types of resins employed are discussed. Original work is presented in all three fields with the emphasis on resin emulsions for impregnation.

Some of the important applications discussed are greaseproof papers, heat and pressure sensitive adhesives, lamination of paper to paper, cellophane, kraft and metal foil, military packaging, manufacture of leather substitutes.

**Developments in the Manufacture of Structural Products from Hydrolized Wood. R. M. Boehm, Masonite Corp.**—It is pointed out that, while wood is the preferred raw material for the Masonite process, it is adapted, with suitable modifications, to the manufacture of structural products from other lignocellulose fiber growths.

Both hardwoods and softwoods are used, separately exploded, and blended to give the desired properties in the finished product. After a softening interval at medium steam pressures, the wood is exploded from a region of steam at 1,000 pounds per square inch pressure to a cyclone where the steam is separated from the gun fiber. Such fiber after washing, refining, and screening is formed into a wet lap and either converted from the wet lap to a high density board product or the moisture first removed by oven drying before press conversion.

The article describes manufacture of new types of products having specific qualities required for the present emergency. Such products include airplane die stock, reflector boards, lofting boards, special panel boards and others.

Brief reference is made to manufacture of lignin bonded panels in special shapes.

**Use of the Dry Indicator Method for Testing the Water Resistance of Asphalted Papers. E. G. Mullen, American Reenforced Paper Co.**— An accelerated dry indicator test for determining the transudation rate of asphalted papers is proposed. The testing water is maintained at 100 Fahr.

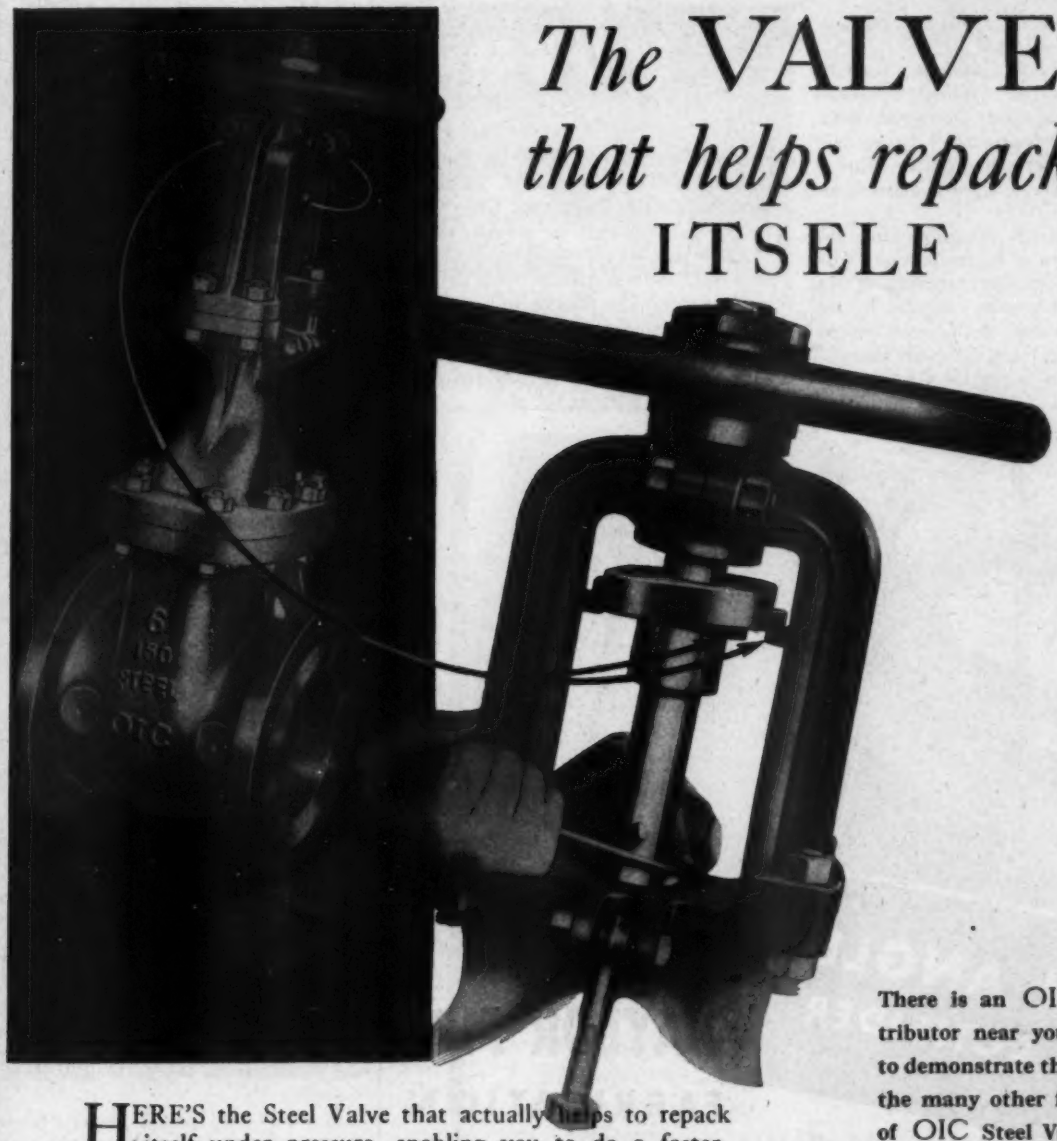
Curves and data showing the relation between transudation time and the water temperature on a representative group of asphalted papers are presented.

**Projection Arrangement for the Determination of Fiber Dimensions. John H. Graff, John R. Feaval, Institute of Paper Chemistry**— The present paper describes a projection arrangement by means of which the length and width of the fibers can be determined and the necessary calculations made in a fraction of the time used for direct microscopic measurements. The relative percentages and frequency distribution of whole and broken fibers, ray cells, and fiber fragments can easily be calculated from these data.

The advantages of comparing different pulps, as regards their relative percentages by weight of short, medium long, and long fibers, by plotting these values on a triangular chart is also demonstrated.

**Additional Weight Factors of Pulps. John H. Graff, Institute of Paper Chemistry** — Weight factors have been determined for Asplund defibrator and Chemipulps and for gumwood chemical pulps. The former weight factors for straw and various bast and vascular bundle fibers have been checked and the effect of beating upon the weight factors determined. The weight factors for ramie and un-

# *The* VALVE *that helps repack* ITSELF




HERE'S the Steel Valve that actually helps to repack itself under pressure, enabling you to do a faster, better job.

The gland and follower are held together by self-locking lugs and are raised as one unit for repacking. The grooved ears on the gland fit into tongued shelves on the yoke when in the raised position.

Eye-bolts hold the entire unit down firmly on the packing. In the repacking process they swing down out of the way — never to be lost or misplaced.

These are just a few of the exclusive features and time and money saving advantages of OIC Steel Valves.

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beaten and beaten Japanese fibers have also been investigated.

The standard deviations for the weight factors of Asplund defibrator and Chemipulps and gumwood chemical pulps are considerably larger than those found for other pulps. This is because of the relative coarseness of these fibers.

The standard deviation for the weight factors of Kozo increases with the decrease of the freeness of the pulp; this is probably caused by the uneven separation of the outer protective sheathing from the main fibers.

The weight factor for virgin cotton linters decreases with the decrease in freeness until a freeness of 405 is reached, at which point the factor is equal to that accepted for cotton rag fibers.

**Surface Activity and Its Application to Paper, John J. Miskel, National Oil Products Co.**—The processing of paper is considered to be primarily a water-borne operation in which surface activity plays an important role. The present and expanding use of surface-active chemicals in the modification of the characteristics of various interfaces as they occur in paper fabrication is discussed as a function of the chemistry, properties, limitations, and advantages of representative members of the following classes of commercially available products:

Anionic Surface-Active Agents—Soaps, sulphated oils and aliphatic esters, sulphonated oils and aliphatic esters; aliphatic alcohol sulphates, alkyl sulphonates, ester sulphates and sulphonates, fatty-amide derivatives, alkyl-aryl sulphonates.

Cationic Surface-Active Agents—Alkyl amines, alkyl amine salts, quaternary ammonium salts.

Non-Ionic Surface-Active Agents—Polyhydroxy alcohol esters, ethylene oxide polymers, polyvinyl alcohol.

**Esters of Certain Lignin Derivatives, Joseph L. Clark, and F. E. Brauns, Institute of Paper Chemistry**—A number of organic esters of alkali spruce lignin A, phenol spruce lignin A, and phenol Willstätter spruce lignin have been prepared. Various physical properties of these esters, including these solubilities in several organic solvents, have been determined.

◆

▸▸▸ THE ANNUAL MEETING of the American Pulp and Paper Mill Superintendents Association will be held May 24-26, 1944 at the Edgewater Beach Hotel, in Chicago.

◆

## CONVENTIONS AND COMING EVENTS

March 28-31—American Management Association Packaging Conference and Exposition, at the Palmer House, Chicago.

April 18-20—All-Ohio Safety Congress and Exhibit at the Deshler-Wallick Hotel, Columbus.

May 2-4—22nd Annual Midwest Safety Conference, at the Hotel Sherman, Chicago.

May 24-26—Annual meeting of the American Pulp and Paper Mill Superintendents Association, at the Edgewater Beach Hotel, Chicago.

October 3-5—33rd National Safety Congress and Exposition, at the Sherman, Morrison and La Salle Hotels, Chicago.

### STATED MEETINGS

**Technical Associations of the Pulp and Paper Industry**

*Delaware Valley Section*—First Friday of each month at the Engineers' Club, Philadelphia, Pa.

*Kalamazoo Valley Section*—First Thursday of each month, including June, at 6:30 P. M. at the Columbia Hotel, Kalamazoo, Mich.

*Lakes States Section*—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

*New England Section*—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

AN ANGLE TO CONSIDER

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Here's a combination made to order for paper mill piping requirements—Naylor, the "paper mill pipe," and Naylor Fabrication Service.

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CONDENSERS
STEAM-JET AIR EJECTORS
HOTWELL AND CONDENSATE PUMPS
STEAM HEATING VACUUM PUMPS
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WATER SOFTENERS
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# Salesmen's Association Marks Its Silver Anniversary

▶▶▶ THE TWENTY-FIFTH ANNUAL meeting of the Salesmen's Association of the Paper Industry was held in the Waldorf-Astoria Hotel, New York, on the afternoon of February 14. With Norman T. Beardsley, of the Union Bag and Paper Corporation, New York, president of the Association, presiding, the officers and committee chairmen rendered their annual reports, which revealed the Association to be in a very healthy condition from every aspect. The reports attested to a most worth-while twelve months of activity, both in the eastern and western divisions. President Beardsley's annual report dealt especially with the work undertaken by the Association on the matter of public relations for the paper industry. During the meeting two beautiful service flags were unfurled showing twenty-five members of the Association in the Armed Forces.

The annual election resulted in the elevation of Burt B. Fisher, of the Bergstrom Paper Company, Neenah, Wisconsin, for the past year western vice president, to the presidency of the Salesmen's Association, succeeding Mr. Beardsley. Stanley O. Styles, of the Martin Cantine Company, Saugerties, New York, was re-elected eastern vice president, and E. F. Miles, of the Crocker McElwain Company, Holyoke, Massachusetts, was again named assistant eastern vice president. Forrest D. Patterson, of the Flambeau Paper Company, Park Falls, Wisconsin, was elected western vice president, succeeding Mr. Fisher, and E. J. Edwards, of the Howard Paper Company, Urbana, Ohio, was elected assistant western vice president. Dr. E. O. Merchant was retained as secretary-treasurer of the Association.

Always a highlight of the American Paper and Pulp Association convention in New York, the annual luncheon of the Salesmen's Association in the Grand Ballroom of the Waldorf-Astoria on Tuesday, February 15, marking that association's silver anniversary, outdid itself this year. With fully 1,600 on hand for the festivities, the huge dining hall was crowded to its capacity up to and including the second tier of boxes. It was a thrilling and splendidly conducted luncheon in a truly patriotic atmosphere, attended by—it would seem—all the stellar lights in the paper firmament.

Amid fluttering flags, accompanied by the ballroom organ, the large assembly stood and sang "America." Retiring President Norman Beardsley acted as toastmaster and introduced the speakers and others at the long table on the dias, including the leading executives of the major trade associations, headed by George H. Mead, president of the American Paper and Pulp Association, and other notables.

Mr. Beardsley then read the roster of ex-presidents of the Salesmen's Association, calling on those present to stand. Fifteen of the seventeen were among the gathering, the remaining two being unavoidably absent. It is something of an axiom within the Salesmen's Association that, fortunately, nothing ever happens to its former presidents.

Then the lights were dimmed and in marched Oscar, the famed maitre d'hotel of the Waldorf-Astoria, bearing a magnificent four tier birthday cake with twenty-five lighted candles. The cake was ceremoniously cut by George K. Gibson, the dean of the Association's ex-presidents, and frequently referred to as the "granddaddy" of the Salesmen's Association.

Mr. Beardsley introduced President Mead of the A.P.P.A., who spoke briefly in endorsement of the Association's public relations program for the paper industry. Among the other guests of honor, and also introduced by Mr. Beardsley, were E. W. Tinker, executive secretary of the American Paper and Pulp Association; Stanford G. Blankinship, president of the American Pulp and Paper Mill Superintendents Association; Ralph A. Hayward, president of the Technical Association; Alfred E. Cadman, secretary of the Canadian Pulp and Paper Association; Rex W. Hovey, director of the WPB Paper Division, Washington, and Robert E. Canfield, A.P.P.A. counsel.

The fifteen past presidents of the Association who were present also

*L to R—Burt B. Fisher, newly elected president of the Salesmen's Association; S. G. Blankinship, president American Pulp and Paper Mill Superintendents Association; Robert S. Henry, assistant to president of American Railroads, who addressed the salesmen, and Norman T. Beardsley, retiring president of Salesmen's Association, at the luncheon.*

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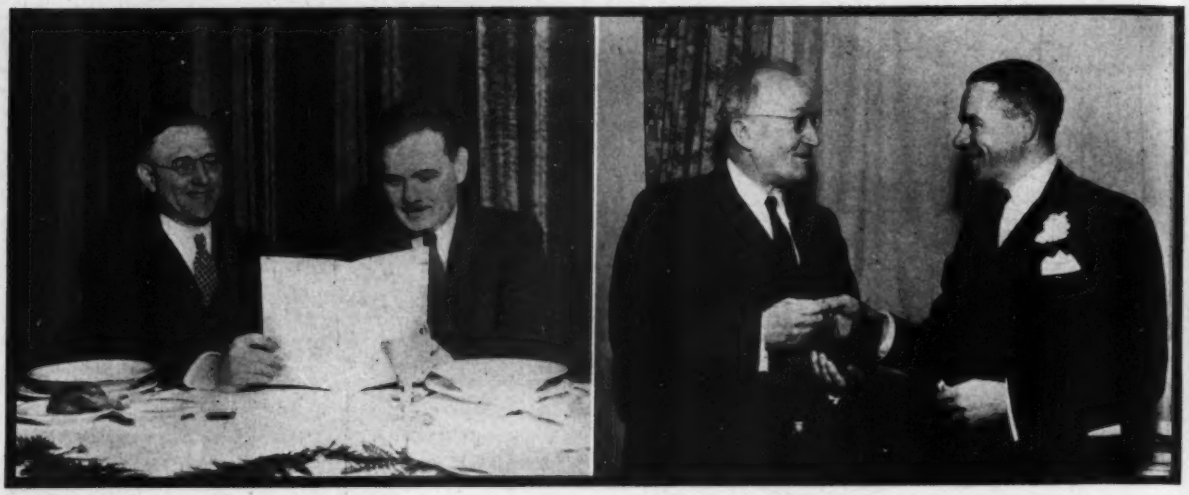


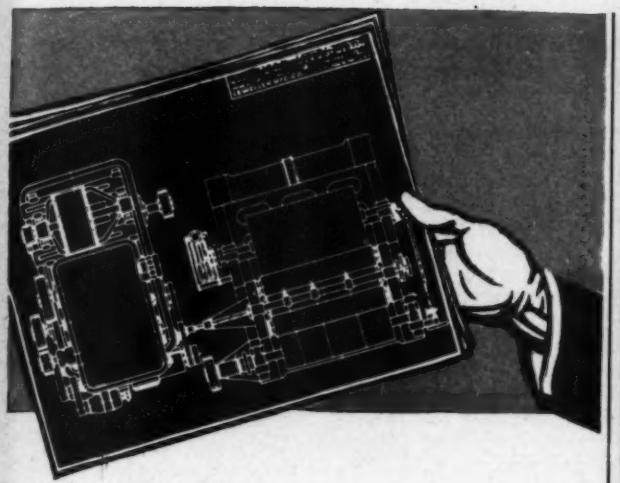
*L to R—Stanley O. Styles, vice president of the Salesmen's Association; Robert E. Canfield, of Wise, Corlett & Canfield, counsel for APPA. Robert S. Henry, assistant to the president of Association of American Railroads, is presented with gift by Alan B. Helffrich, assistant chairman of Salesmen's Association Luncheon, as a token of thanks for the good work he has done for the Association.*

were honored guests. These fifteen and the years during which they served are: George K. Gibson, 1920-21; Joseph L. Fearing, 1923-25; Walter E. Perry, 1925-27; James H. Coy, 1927-29; Samuel C. Knode, 1929-31; Harold R. Knott, 1931-34; William L. Raymond, 1934-35; Reginald C. Johnson, 1936-37; Edson R. Lyman, 1937-38; John T. Burress, 1938-39; Hugh N. Phillips, 1939-40; John R. Diggs, 1940-41; John D. Johnston, 1941-42, and Courtney H. Reeves, 1942-43. James Layden, of the Hampden Glazed Paper and Card Company, Holyoke, Mass., sang "God Bless Our Presidents," an adaptation of "God Bless America."

Retiring President Beardsley devoted most of his address to the Association's public relations program for the paper industry. The principal speaker of the day was Robert S. Henry, assistant to the president, Association of American Railroads, a former newspaper man, secretary to the Governor of Tennessee and a practicing attorney. Mr. Henry proved to be a forceful speaker. He stated that industry's obligations to itself are to turn out a good product and to sell its product or its service at an equitable price, and emphasized that a third and important obligation is the maintenance of public relations. He cited the recent history of American railroads as an example of how a "deposit of good will" could carry an industry through a public crisis, such as the one which confronted the railroads at the beginning of the war.

"Every industry has a responsibility to the people of the country, not only to do its job, and to do it well, but to explain itself, to let people understand. Only in that way will people understand and appreciate the part of each industry in the system, and the workings of the system as a whole."

*Group of past presidents of Salesmen's Association taken following the Association's Silver Anniversary Luncheon. L to R—Seated: John T. Burruss, 38-39; Walter E. Perry, 25-27; James H. Coy, 27-29; George K. Gibson, 20-21; Joseph L. Fearing, 23-25; Samuel C. Knode, 29-31. Standing: John R. Diggs, 40-41; William L. Raymond, 34-35; Edson R. Lyman, 37-38; Reginald C. Johnson, 36-37; Hugh N. Phillips, 39-40; John D. Johnston, 41-42; Courtney H. Reeves, 42-43; Norman T. Beardsley, 43-44; and William R. Knott, 31-34.*



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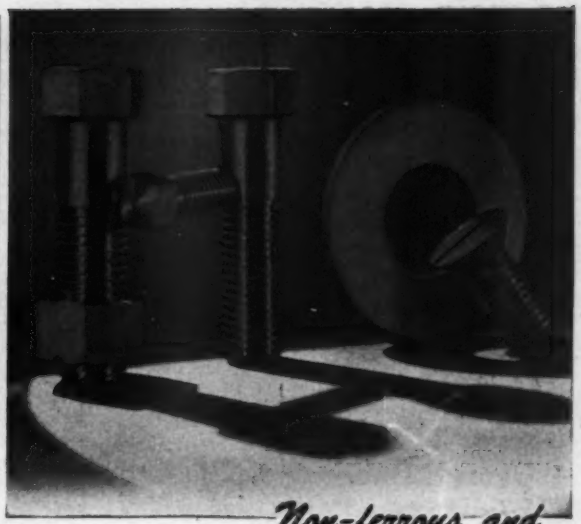

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# Divisional Group Meetings

## A.P.P.A. Pulpwood Committee

That the critical shortage of paper for America's War and civilian needs is almost entirely due to the lack of labor to produce the required amount of pulpwood was emphasized in the report of the Pulpwood Committee of the American Paper and Pulp Association.

In its report the committee recommended:

"That every effort be made to increase the use of prisoners of War with the added recommendation of the Committee that all companies contemplating the use of prisoners of War should act forthwith in providing facilities so that the industry will not suffer from competition with agricultural and other seasonal industries."

The Committee also asked that steps be taken to secure closer co-operation from Canadian government authorities in providing the labor necessary to produce the amount of wood needed by the industry, both in this country and in Canada.

## Writing Paper Manufacturers Association

Five addresses featured the 83rd annual meeting of the Writing Paper Manufacturers Association in the Jansen Suite of the Waldorf-Astoria Hotel, New York, on February 15. John D. Zink, president of the Association, spoke on "Post-war Planning;" Morris C. Dobrow, secretary of the Association, presented a "Review of 1943 and Prospects for 1944;" H. R. Baldwin, chief of the Writing Paper Section of the WPB, discussed the "Fine Paper Industry as Seen from Washington;" David Graham, chief of the Pulp Allocation Division of the WPB, talked on "Pulp Allocation Procedure," and Harold T. Martin, an industrial relations adviser, spoke on "Labor and Wage Problems Facing the Fine Paper Industry."

Mr. Zink, of the Strathmore Paper Company, West Springfield, Mass., was re-elected president of the Association to serve his third term. H. H. Hanson, of W. C. Hamilton & Sons, Miquon, Pa., and M. D. Bardeen, of the Lee Paper Company, Vicksburg, Mich., were re-elected vice presidents, and M. C. Dobrow was again named executive secretary-treasurer, with G. V. Johnson as assistant secretary.

The following were elected to comprise the Association's Executive Committee for the ensuing year: H. R. Baldwin, Hammermill Paper Company; G. H. Beckett, Beckett Paper Company; H. V. Burgee, Parsons Paper Company; D. D. Coffin, C. H. Dexter & Sons, Inc.; Bruce Crane, Crane & Co., Inc.; I. N. Esleeck, Esleeck Manufacturing Company; W. J. Garrity, Munising Paper Company; A. C. Gilbert, Gilbert Paper Company; H. H. Hanson, W. C. Hamilton & Sons; M. D. Bardeen, Lee Paper Company; T. A. Hendry, The Mead Corporation; J. E. Holmes, Chemical Paper Mfg. Company; E. A. Oberweiser, Fox River Paper Corporation; E. C. Reid, American Writing Paper Corporation; A. C. Remley, Nekoosa-Edwards Paper Company; F. H. Savage, International Paper Company, and W. B. Zimmerman, Maxwell Paper Company.

The following alternates were also named: R. S. Madden, Valley Paper Company, and A. P. Story, Chillicothe Paper Company.

At the annual meeting of the Cover Paper Group of the Writing Paper Manufacturers Association, held on February 16, W. W. Langtry, of the District of Columbia Paper Mills, was re-elected chairman of the Group, together with a governing committee consisting of the following: Mr. Langtry; M. A. Park, of the Marvellum Company, vice chairman; G. H. Beckett, of the Beckett Paper Company; A. E. Frampton, of the Hammermill Paper Company, and R. H. Morrill, of the Chemical Paper Mfg. Company.

At the annual meeting of the Bristol Board Group of the Writing Paper Manufacturers Association, Norman Harrower, of Linton Brothers & Co., was elected chairman of the Group and also to head the governing committee consisting of Kendall Wyman, of the Champion Paper & Fibre Company, vice chairman; J. E. Holmes, of the Chemical Paper Mfg. Company; R. M. Swaney, of the Franklin Paper Company, and H. W. Tunstall, of Wheelwright Papers, Inc.

## Sulphite Paper Manufacturers

The Sulphite Paper Manufacturers Association held its annual meeting on February 14 in the Waldorf-Astoria Hotel, New York, and re-elected Edgar W. Kiefer, president of the Port Huron Sulphite & Paper Company, Port Huron, Mich., as general chairman of the Association. Other officers elected were Fred P. Pandow, of the Consolidated Water Power & Paper Company, Wisconsin Rapids, Wis., vice chairman of the Bleached Group; George Stuhr, of the Southern Kraft Division of the International Paper Company, New York, vice chairman of the Unbleached Group; Rufus L. Sisson, Jr., of the Racquette River Paper Company, Potsdam, N. Y., vice chairman of the Manila Group, and Wayne A. Brown, of the Crown Zellerbach Corporation, New York, vice chairman of the Machine Glazed Group.

The foregoing officers and the following will compose the Association's Board of Governors for 1944: Fred W. Cole, Fraser Industries, Inc., New York; Jack B. Cowie, Hollingsworth & Whitney Company, New York; Gilford F. Henderson, Brown Company, New York; Neil E. Nash, Nekoosa-Edwards Paper Company, Port Edwards, Wis.; John Stevens, Jr., Marathon Paper Mills Company, Rothschild, Wis., and Rufus I. Worrell, Mead Sales Company, Inc., New York.

## Groundwood Paper Manufacturers

The Groundwood Paper Manufacturers Association, in annual session in the Waldorf-Astoria Hotel, New York, on February 14, elected Paul A. Mahony, of the International Paper Company, president to succeed E. G. Murray, of the St. Regis Paper Company. Fred Cole, of Fraser Industries, Inc., was named eastern vice president; George H. Fay, of the Mead Sales Company, Inc., western vice president, and Robert E. Canfield, executive vice president. These officers together with E. G. Murray, of the St. Regis Paper Company, and James H. Coy, of the Flambeau Paper Company, comprise the Board of Governors. Dr. E. O. Merchant was renamed secretary-treasurer.

## Blotting Paper Manufacturers

The Blotting Paper Manufacturers Association held its annual meeting on February 14 in the Waldorf-Astoria Hotel, New York, and re-elected Graham A. Carlton, of the Standard Paper Mfg. Company, Richmond, Va., president, and also re-elected Joseph Hallowell, of the Wrenn Paper Company, Middletown, Ohio, vice-president. Russell L. Winget, of New York City, was again named secretary and treasurer.

## United States Pulp Producers Association

The annual meeting of the United States Pulp Producers Association was held at the Waldorf-Astoria Hotel, New York, on February 13, at which five regional directors and six directors

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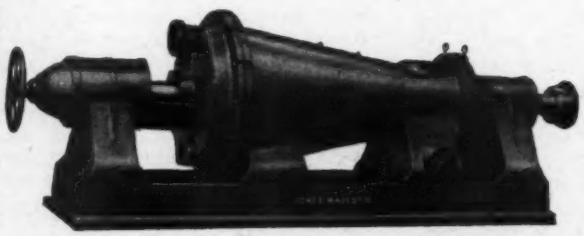

When planning for tomorrow's faster production at lower cost, you will do well to look searchingly today into the many advantages of the Jones Jordan. For now is the time to *consider* replacing your obsolete Jordans. When peace comes, scores of mill executives and engineers will be striving to get quick delivery of new Jordans. And those who are planning their future needs now will be first to meet post war competition by the use of equipment that will help provide a more uniform pulp with a resultant higher quality finished product. If you are looking ahead, why not let a Jones sales engineer tell you about the many advantages of Jones Jordans? Write us today.

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at large were elected to the Executive Board for the ensuing year.

The regional directors are Amor Hollingsworth, of the Penobscot Chemical Fibre Company, representing New England; Norman W. Wilson, of the Hammermill Paper Company, Middle Atlantic; Stuart E. Kay, of the International Paper Company, South; Stuart B. Copeland, of the Northwest Paper Company, Lake States, and Robert B. Wolf, of the Pulp Division, Weyerhaeuser Timber Company, West Coast.

Directors at large are Alexander Calder, Union Bag & Paper Corporation; Downing P. Brown, Brown Company; J. M. Conway, Hoberg Paper Mills; U. M. Dickey, Soundview Pulp Company; M. B. Houston, Rayonier Incorporated, and Lawson Turcotte, Puget Sound Pulp & Timber Company.

Oliver M. Porter, of New York City, was again named executive director of the Association.

## Association of Pulp Consumers, Inc.

At the annual meeting of the Association of Pulp Consumers, Inc., held on February 16 at the Waldorf-Astoria, the following directors were elected to serve for three years, following the custom of the past that no directors are re-elected to succeed themselves:

Robert G. Fairburn, president, Berst-Foster-Dixfield Company, Plattsburg, N. Y.; Walker Hamilton, vice president, Riegel Paper Corporation, New York City; Maxwell D. Bardeen, president and general manager, Lee Paper Company, Vicksburg, Mich.; George K. Ferguson, president and general manager, Watervliet Paper Company, Watervliet, Mich., and Thomas Morriss, vice president, Central Fibre Products Company, Inc., Chicago, Ill.

William M. E. Roberts, secretary of the Fox River Paper Corporation, Appleton, Wis., was elected to fill the unexpired term of Major Richard F. Bellack, who is now in the service. The directors who continue in office are:

Norman F. Greenway, Robert Gair Company, Inc., New York City; F. E. Brown, Manchester Board & Paper Company, Richmond, Va.; R. P. Hodgdon, Deerfield Glassine Company, Monroe Bridge, Mass.; Joseph E. Holmes, Chemical Paper Mfg. Company, Holyoke, Mass.; L. J. Long, Crystal Tissue Company, Middletown, O.; George F. Moxley, West Jersey Paper Mfg. Company, Camden, N. J.; Robert R. Richardson, Gardner-Richardson Company, Middletown, O.; Dwight L. Stocker, Michigan Paper Company, Plainwell, Mich., and Austin P. Story, Chillicothe Paper Company, Chillicothe, O.

Following the annual meeting the directors met and elected Dwight L. Stocker president for 1944, succeeding George R. Wallace, of the Fitchburg Paper Company, Fitchburg, Mass.; Robert G. Fairburn vice president, succeeding Norman F. Greenway, and C. V. Maudlin, of Washington, D. C., secretary-treasurer.

## Cardboard Manufacturers Association

The Cardboard Manufacturers Association, at its annual meeting at the Waldorf-Astoria Hotel on February 15, decided to dissolve as a separate organization and ask for affiliation with the Specialty Paper and Board Affiliates. Under the proposal of the Cardboard Association it will have two groups in the Specialty Paper and Board Affiliates, a Coated and Tag Board Group, headed by Malcolm B. Lowe, of the Lowe Paper Company, Ridgefield, N. J., and a Photomount Group, headed by Maurice Park, of the Marvellum Company, Holyoke, Mass.

## Kraft Paper Association

Willard J. Dixon, vice president of the St. Regis Paper Company, was re-elected president of the Kraft Paper Association at the annual meeting of that organization in the Waldorf-Astoria Hotel, New York, on February 16, and George Stuhr, of the Southern Kraft Division of the International Paper Company, was elected vice president.

The foregoing officers and the following will compose the Executive Committee for the coming year: W. H. Anders, Nashua River Paper Company; O. P. Carter, Gaylord Container Corporation; H. S. Daniels, Union Bag & Paper Corporation; J. R. Diggs, Mosinee Paper Mills; K. O. Elderkin, Grossett Paper Mills; R. L. Fitts, Southern Advance Bag & Paper Company; G. F. Henderson, Brown Company; R. A. McDonald, Crown Zellerbach Corporation; S. M. Phelan, Jr., West Virginia Pulp & Paper Company, and C. W. Smith, Central Paper Company.

## Glassine and Greaseproof

The Glassine and Greaseproof Manufacturers Association held its annual meeting on February 16 at the Waldorf-Astoria and elected Paul F. Moore, of the Westfield River Paper Company, chairman to succeed Robert F. Nelson, of the Glassine Paper Company. Serving with President Moore on the Executive Committee will be Folke Becker, Rhinelander Paper Company; Paul E. Hodgdon, Deerfield Glassine Company; Robert F. Nelson, Glassine Paper Company; John L. Riegel, Riegel Paper Corporation, and Arthur Schwab, Hammersley Manufacturing Company.

## Specialty Paper and Board Affiliates

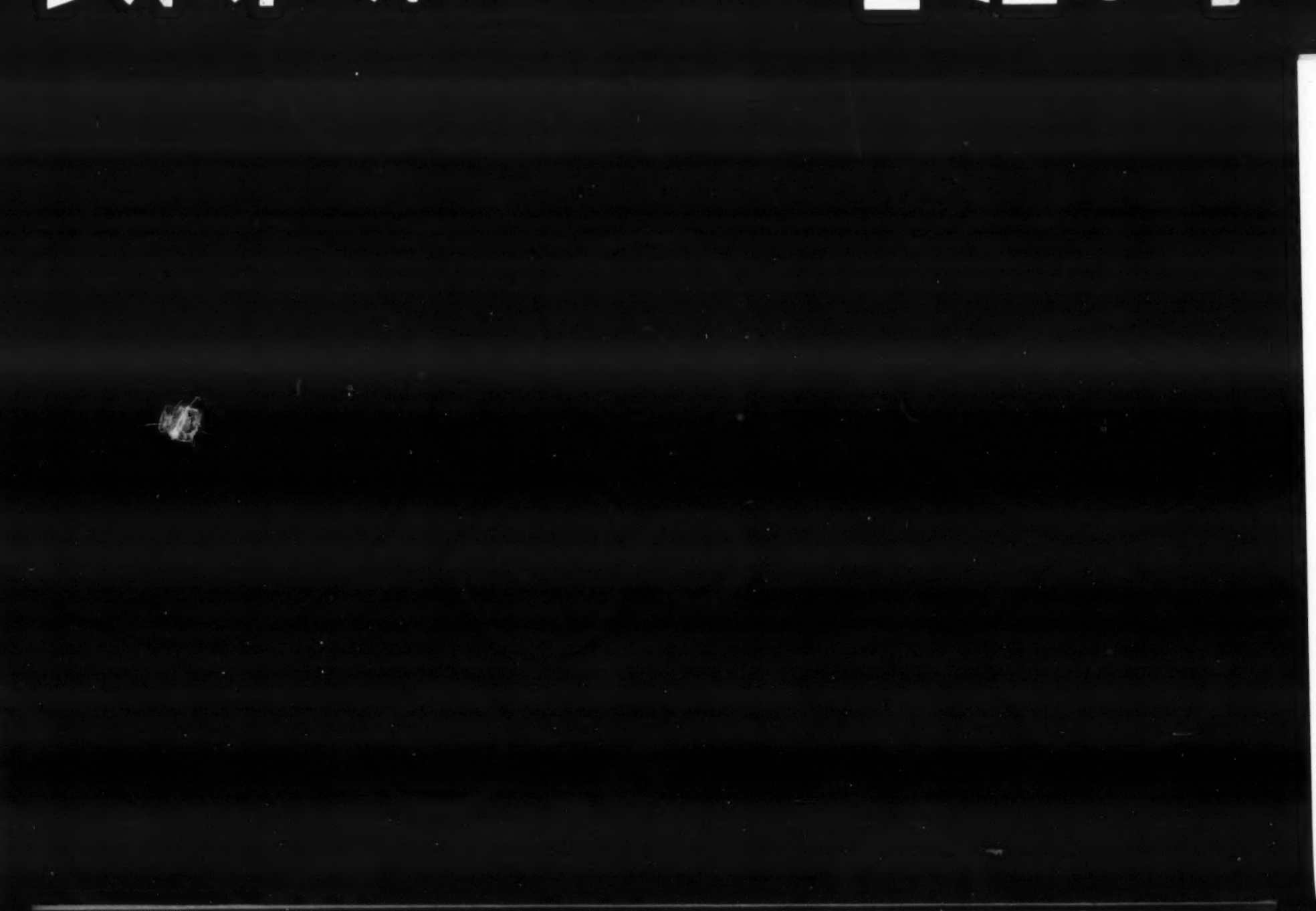
The Specialty Paper and Board Affiliates met at the Waldorf-Astoria in New York on February 16 and elected a new Executive Committee for the ensuing year. The newly-elected committee will meet in New York in March in annual session and elect a president and vice president.

The new Executive Committee consists of R. R. Bachman, Riegel Paper Corporation, New York City; Frank C. Ash, Oswego Falls Corporation, Fulton, N. Y.; J. B. Cowie, Hollingsworth & Whitney Company, Boston, Mass.; William Gamble, Brownville Board Company, Brownville, N. Y.; T. Stewart Foster, Foster Paper Company, Utica, N. Y.; Harry C. Johnson, Sorg Paper Company, Middletown, O.; H. S. Lewis, J. P. Lewis Company, Beaver Falls, N. Y.; Malcolm B. Lowe, Lowe Paper Company, Ridgefield, N. J.; A. E. Nicholson, Hollingsworth & Vose Company, East Walpole, Mass.; George O'Connor, Mohawk Paper Mills, Inc., Cohoes, N. Y.; Maurice Park, Marvellum Company, Holyoke, Mass.; Walter Sheehan, Missisquoi Corporation, Sheldon Springs, Vt.; S. B. Sutphin, Beveridge Paper Company, Indianapolis, Ind., and Kendall Wyman, Champion Paper & Fibre Company, Hamilton, O.

The Affiliates absorbed the Cardboard Manufacturers Association at the annual meeting. More than 75 members attended the meeting and heard addresses by James L. Madden, chief of the WPB Pulpwood Products Section; David Graham, chief of the WPB Pulp Allocation Unit, and E. W. Tinker, executive secretary of the American Paper and Pulp Association.

## Paper Exporters Council

The United States Paper Exporters Council, Inc., held its annual meeting at the Waldorf-Astoria on February 15 and elected George O. Cobean, president of Bulkley, Dunton & Company, S.A., New York City, president for the ensuing year, succeeding Eli de Vries, of Parsons & Whittemore, Inc., New York City. Frank W. Smith, of the National Paper & Type Company, New York, was elected vice president, and Fred C. Strype, of Fred C. Strype, Inc., New York, secretary-treasurer. These officers, together with Adalbert Greiner, of the China American Paper



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SUPERIOR PMC CHEMICALS

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& Pulp Company, and Elwin Walker, of the Walker Goulard Plehn Company, constitute the Board of Directors for 1944.

### Soda Pulp Manufacturers

The Soda Pulp Manufacturers Association met at the Waldorf-Astoria Hotel on February 15. There was a discussion of various problems currently affecting the industry, after which the meeting was adjourned until a future date, probably in March, when the election of officers will take place. Eustis Paine, of the New York & Pennsylvania Company, New York City, is chairman of the Association; Amor Hollingsworth, of the Penobscot Chemical Fibre Company, Boston, Mass., vice chairman, and Rufus I. Worrell, of the Mead Sales Company, Inc., New York City, secretary and treasurer.

### Waxed Paper Institute

Members of the Waxed Paper Institute held their annual meeting in the Waldorf-Astoria Hotel, New York, on February 16 and elected officers for the ensuing year. Each year three new executive committeemen are chosen for a term of three years, to serve with six other members. This year the members elected were A. Souphon, of the Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich.; Edgar Berkley, of the Waxide Paper Company, Kansas City, Mo., and V. H. Wilshire, of the Specialty Papers Company, Dayton, O.

Mr. Wilshire was elected president of the Institute. Serving with him during 1944 will be Karl L. Zimmer, of Zimmer Products, Inc., Indianapolis, Ind., vice president; George P. Lamb, of Washington, D. C., counsel; Richard M. McClure, secretary-treasurer, and L. S. Baker, assistant to Mr. McClure.

Two new firm members were elected to the Institute, which now has a roster of 24 active organizations. In electing the new members, the Institute crossed into Canada, which will be represented in the Institute by the Appleford Paper Products, Ltd., of Hamilton, Ont., and E. S. & A. Robinson, Ltd., of Toronto.

### The Tissue Association

The Tissue Association, holding a series of meetings at the Waldorf-Astoria Hotel in New York on February 13, 14, 15 and 16, re-elected R. B. Stevens, of the Stevens & Thompson Paper Company, Greenwich, N. Y., president, and also re-elected John McEwan, of the Mohawk Valley Paper Mills, Little Falls, N. Y., vice president. Ross A. Fyfe, of New York City, was again named executive secretary.

The Board of Governors elected is comprised of J. M. Conway, Hoberg Paper Mills; E. E. Grant, Crystal Tissue Company; A. B. Hansen, Northern Paper Mills; Joel S. Hartman, Barclay Tissue Corporation; Grafton Houston, Fort Howard Paper Company; J. M. Leo, Brown Company; John McEwan, Mohawk Valley Paper Mills; John McKirdy, Jr., Scott Paper Company; R. A. Montieth, Personal Products Corporation; C. E. O'Connor, Berst-Foster-Dixfield Company; B. F. Picola, Gotham Tissue Mills; B. I. Reider, Victoria Paper Mills; Samuel Sall, Modern Tissue Mills; R. B. Stevens, Stevens & Thompson Paper Company; James F. Suter, Rondout Paper Mills, and R. W. Sweet, Sweet Bros. Paper Manufacturing Company, Inc.

Divisional officers of the Association were chosen as follows:

*Roll Toilet Tissue Division*—Joel S. Hartman, chairman, and John McKirdy, Jr., vice chairman.

*Paper Towel Division*—Wayne A. Brown, chairman, and H. G. Wintgens, vice chairman.

*Sanitary Absorbent Tissue Division*—R. A. Montieth, chairman, and Samuel Sall, vice chairman.

*Jumbo Roll Division*—H. W. Sweet, chairman, and James F. Suter, vice chairman.

*Wrapping Tissue Division*—John McEwan, chairman, and Harry G. Cook, vice chairman.

### Newsprint Manufacturers Association

Harold S. Smith, of the Maine Seaboard Paper Company, was re-elected president of the Newsprint Manufacturers Association of the United States, Inc., at the annual meeting of that organization in the Waldorf-Astoria Hotel, New York, on February 15. J. D. Zellerbach, of the Crown Zellerbach Corporation, was again named vice president; Royal S. Kellogg was re-elected treasurer, and Dr. E. O. Merchant was elected secretary.

President Smith, Vice President Zellerbach, and John L. Hobson, St. Croix Paper Company; Samuel Pruyn, Finch, Pruyn & Co.; E. L. Kurth, Southland Paper Mills, Inc., and John H. Smith, Hawley Pulp & Paper Company, were elected to compose the Executive Committee.

Dr. Merchant, the new secretary, replaces Louis W. Adams, who resigned to join the Electro Rust-Proofing Corporation, Dayton, O. Dr. Merchant is also secretary of the Groundwood Paper Manufacturers Association and of the Salesmen's Association of the Paper Industry.

### Waterproof Paper Group

The annual meeting of the Waterproof Paper Group was held at the Waldorf-Astoria on February 14, followed by a luncheon. J. D. Griffin, of the Scutan Division of the Union Bag & Paper Corporation, was elected chairman of the Group, succeeding Otis Angier, of the Angier Corporation, and F. P. Wood, of the Simplex Paper Corporation, was elected vice chairman, succeeding Mr. Griffin.

The Executive Committee for 1944 consists of Mr. Griffin, Mr. Wood, Mr. Angier; Arthur M. Anderson, the Sisalkraft Company; F. E. Donovan, Specialty Converters, Inc.; J. F. Doyle, Arkell Safety Bag Company, and J. D. Young, Edgewater Paper Company. Alternate members of the Executive Committee are W. W. Rowe, Cincinnati Industries, Inc., and W. G. Cowan, the Ruberoid Company.

### Coated and Processed Paper

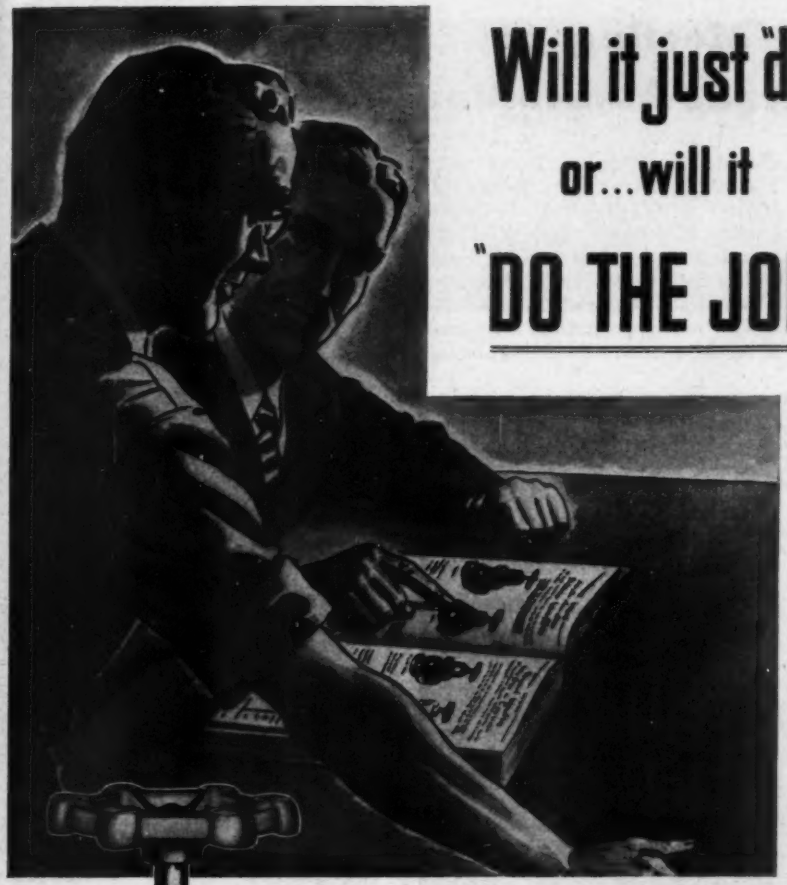
The Coated and Processed Paper Association, in annual meeting at the Hotel Commodore on February 14, re-elected John N. Hazen, of the Hazen Paper Company, Holyoke, Mass., president; James T. Cronk, of the Hampden Glazed Paper & Card Company, Holyoke, Mass., vice president of the manufacturing division, and Ralph H. Laue, of Bradner, Smith & Co., Chicago, vice president of the merchandising division.

George J. E. Buell, of Charles W. Williams & Co., New York City, and Harry B. Conklin, of Louis Dejonge & Co., New York City, were elected to the Executive Committee.

At the luncheon meeting, C. W. Browne, editor of *Modern Packaging*, gave an address on "Crystal Gazing in the Packaging Field."

### Paper Makers' Advertising Association

Hubert Foster, of the Mead Corporation, New York City, was elected president of the Paper Makers' Advertising Association at the twenty-ninth annual meeting of that organization at the Hotel Lexington, New York, on February 14. Mr. Foster succeeds Maurice A. Park, of the Marvellum Company, who had served for three years as president and previously for six years as treasurer. Richard A. Faulkner, of the International Paper Company, was elected eastern vice president; Frank L. Blake, Kimberly-Clark Corporation, western vice president; Floyd L. Triggs, Riegel Paper Corporation, treasurer, and Bradley E. Stafford, Strathmore Paper Company, secretary.



# Will it just "do," or...will it "DO THE JOB"

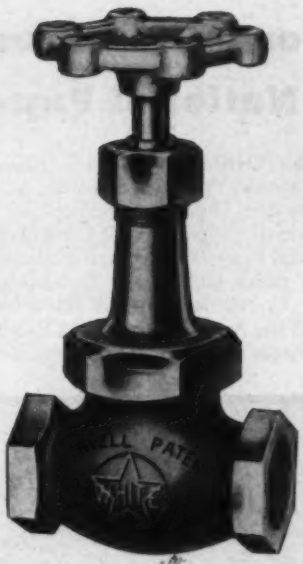
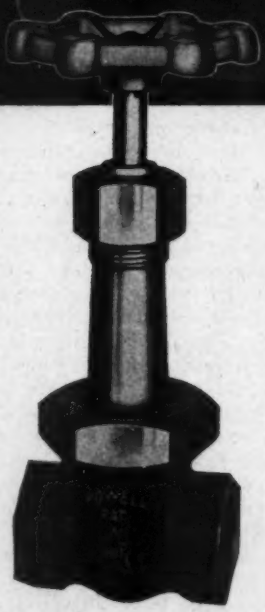


**Fig. 1708**—Bronze Globe Valve for 200 pounds W.P. Has screwed ends, union bonnet, renewable seat and regrindable, renewable hard bronze semi-cone plug type disc. This valve is especially suitable for throttling service.



"There is a valve that will *"do"*—or "there is a POWELL Valve that will *do the job*"—what a vital difference in meaning.

But as long as you have POWELL Engineering at your service, you'll never have to make a valve "do"—because POWELL not only has a complete line of standard valves as listed in our general catalog but—POWELL Engineering is ready at all times to offer *specialized* service.

Shown here are three of POWELL'S complete line of Bronze Valves. These valves are correctly engineered in every detail for controlling the flow of low-pressure steam, oil, water or gas.

**Fig. 500**—Bronze Gate Valve for 125 pounds W.P. Has screwed ends, screwed-in bonnet and inside screw rising stem. Sizes ¼" to ¾" are equipped with taper wedge solid disc; sizes 1" to 3" with taper wedge double disc.

**Fig. 375**—Bronze Gate Valve for 200 pounds W.P. Has screwed ends, union bonnet, inside screw rising stem and a special hard bronze disc.

## The Wm. Powell Co.

***Dependable Valves Since 1846***

**Cincinnati 22, Ohio**

# POWELL VALVES

# Forty-first Annual Meeting of National Paper Trade Association

▸▸▸ THERE WAS AN EXCEPTIONALLY large attendance at the forty-first annual convention of the National Paper Trade Association, whose membership comprises the leading paper jobbers and merchants of the United States, held concurrently with the American Paper and Pulp Association's annual convention at the Waldorf-Astoria Hotel, New York, on February 14 to 16, inclusive. Over 550 paper merchants, representing practically all sections of the country, registered for the three days' activity.

*Phillip J. Philbin, Congressman from Massachusetts, spoke at N.P.T.A. session in starlight roof, at 3:00 P. M. Monday.*

R. M. Harris, of The Alling & Cory Company, Rochester, New York, was elevated to the presidency of the Association at the annual meeting on the final day of the N.P.T.A. convention. During the past year Mr. Harris has served as vice president in charge of the Fine Paper Division. He succeeds Richard C. Kettles, Jr., of Charles F. Hubbs & Company, New York, acting Association president for the past year.

G. E. Carpenter, of the Carpenter Paper Company, Omaha, Neb., now on leave as a consultant in the Office of Civilian Requirements, Washington, was re-elected vice president in charge of the Wrapping Paper Division. A. W. Towne, of Blake, Moffitt & Towne, San Francisco, California, was elected vice president in charge of the Fine Paper Division to succeed Mr. Harris. J. O. Bulkley, of Bulkley, Dunton & Company, New York, was re-named treasurer, and A. H. Chamberlain continues as executive secretary, assisted by W. G. Leathers.

Two new appointments were made to the Association's Executive Committee for 1944. Besides Mr. Harris, Mr. Carpenter and Mr. Towne, H. A. Hartinger, of the Paper Supply Company, Minneapolis, Minnesota, and L. A. Ramaker, of the Bouer Paper Company, Milwaukee, Wisconsin, were named. Also on the Executive Committee are H. L. Cowan, of the Franklin-Cowan Company, Buffalo, New York, and W. W. Hinrichs, of Fred W. Hinrichs, Inc., New York City, both of whom served last year.

Reports of executive officers and committees were rendered at the annual meeting. Included were a report of the WPB Paper Merchants Advisory Committee, a report of the Traffic Committee of the Association by Charles R. W. Campbell, and a report of the Association's Committee on Postwar Planning, by Chairman P. A. Stuhlreyer.

Among the speakers who addressed the meetings of the paper merchants were E. W. Tinker, executive secretary of the American Paper and Pulp Association; C. J. Slicklen, chairman of the Paper Merchants Advisory Committee to the OPA; H. R. Baldwin, chief of the Writing Paper Section of the WPB; J. A. Bresnahan, Washington counsel of the UTA and other graphic arts organizations; Morris C. Dobrow, executive secretary of the Writing Paper Manufacturers Association; O. F. Marquardt, of the Paper Merchants Advisory Committee to the OPA; Lt. Col. J. K. Javits, N.P.T.A. legal counsel; G. E. Carpenter, consultant, Office of Civilian Requirements; W. G. Leathers, assistant secretary of the N.P.T.A.; Hon. Philip J. Philbin, Member of Congress from Massachusetts; E. R. Gay, director of the General Commodities Division, Office of Civilian Requirements, and E. R. Metcalf, chief of the Cordage Branch of the WPB.

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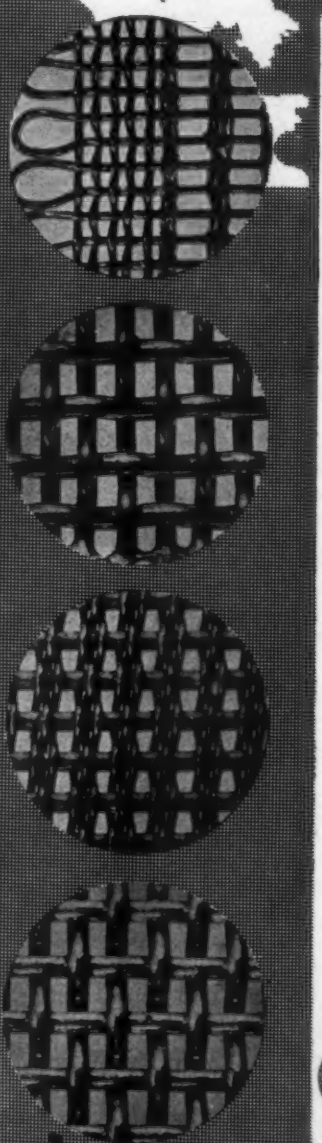
## SUPPLY DEALERS ANNUAL DINNER

All previous records of attendance were shattered—and by a wide margin—at the thirty-sixth annual dinner of the New York Association of Dealers in Paper Mills Supplies, Inc., in the Grand Ballroom of the Hotel Commodore on the evening of Tuesday, February 15, which event is always one of the social highlights of Paper Convention Week in New York. More than 500 attended the dinner, including nearly all of the prominent suppliers of papermaking raw material in the East and many mill purchasing agents and other executives as guests.

Following the serving of an excellent dinner, an entertaining stage show by a galaxy of performers recruited from the theatre, radio and night clubs was enjoyed, the party lasting until close to midnight. The diners were seated at lengthy tables extending from the stage on one side of the room, thus affording all an advantageous view of the entertainers.

Walter H. Martens, who has served the Association as chairman of the Dinner Committee for many years, was in charge of arrangements for the annual affair, assisted by John L. Nielsen, president of the Association, and Arthur Rosenfeld. An attractive souvenir journal of more than 100 pages containing the menu, the stage program and advertisements of numerous firms in the trade was distributed as a memento of the dinner. Alfred J. Moran, secretary of the Association, headed the Journal Committee, ably assisted by Miss Shirley Rief, Joseph V. Carrano, Bert Lorenz, Anthony S. Gaccione and Joseph P. Gaccione.

# *Microscopic* IMPROVEMENT LEADS TO *Major* PROGRESS



IT HAS often been pointed out that the finest things in life are unseen by the unaided eye. This is true of science and industry. It is true of Fourdrinier wires.

The advances in wire cloth excellence are not of the apparent variety. Typical are the marked developments which have taken place in seams and selvedges, as well as in the quality of the wire itself. These are among the finer phases of manufacture — phases that can be carried forward only by unremitting application under the microscope. But the overt progress made possible by such minute care has been both great and practical, not only in the quality of wire cloth, but also in that of the paper that results.

All this goes back to *research*. Nor can you start and stop. If improvement in any product is to be constant, the research behind it must likewise be continuous. The Lindsay policy calls for just such a record of steady product improvement, to be widened as conditions permit.

**THE LINDSAY WIRE WEAVING COMPANY**

*Serving the Paper Industry Since 1903*

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*Lindsay* **WIRES**

**FOR PAPER MILLS**

## QUEBEC FORESTRY ASS'N

The fifth annual meeting of the Quebec Forestry Association, held in Quebec City on February 4, was attended by upwards of 300 delegates who came not only from every corner of the province, but from outside points.

The one-day session was presided over by Avila Bedard, Deputy Minister of Lands and Forests for Quebec Province, who was re-elected Association president for the following term.

Guest speaker at the dinner, Dr. Joseph Risi, director of the forestry products research laboratory for the provincial government at Duchesnay, requested the government to increase its financial assistance to that laboratory, on the grounds that 30 per cent of the Canadian forests are located in the province, and that too much care could not be taken of this investment.

The delegates unanimously voted to complete the organization of the Association on a provincial scale through the establishment of regional branches for the north shore and Quebec district.

At the evening banquet, parchments conferring honorary membership in the organization were awarded to Honorable Wilfred Hamel, provincial minister of Lands and Forests, and to Dr. C. D. Howe of Toronto, former dean of the School of Forestry, Toronto University.

The first provincial congress will be held in Quebec City from August 23 to August 25.

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## SOUTHERN FORESTRY PROGRAM LAUNCHED BY TIMBER GROWERS

Timberland owners and foresters from ten southern states were enrolled in the Southern Forestry Conference during its two-day session held at Atlanta, Georgia, the latter part of January.

The Southern Forestry Conference is an activity of the Forest Farmers Association Co-operative, which is distinctly a timber growers movement. Headed by Julian F. McGowin as chairman, a special research committee has launched an aggressive and strongly supported program looking to protection against fire, theft and trespass. These and other recommendations seeking action on the state level have been passed to the Governors of the twelve states in the southern territory. In several instances these recommendations already have been referred by the Governors to the proper state boards and officials.

This activity is motivated by a desire to place forestry in the south on a secure basis, to develop an integrated wood-using industry and to secure the adoption of forest management practices, particularly among small timber land owners.

Conference speakers included Lyle F. Watts, chief of the United States Forest Service; C. L. Forsling, chief of the Research Division of the Forest Service; forestry officials, and owners and operators of timberlands.

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## ONTARIO PAPER CO. OFFERS PRIZE FOR IDEAS

The Ontario Paper Company, Limited, of Thorold, Ontario, announces that it offers a prize of $1,000 to be made through the Technical Section of the Canadian Pulp and Paper Association, for the best method proposed for the utilization of a substantial portion of popular and/or birch fibre in making newsprint paper.

The object of offering the prize is to stimulate ideas and ingenuity leading to the use of as large a percentage as possible of such woods and to improve the quality and economics of newsprint manufacture. Many of our forests today consist of spruce, balsam, birch and poplar and when cut over the birch and poplar are left standing. This not only depletes the forests of presently used species but builds up increasing forest inventory of poplar and birch. A successful method of pulp manufacture using poplar and/or birch would be an important step towards stabilizing and extending the useful life of our forests.

The value of suggestions made will be weighed in direct proportion to the percentages poplar and/or birch usage made possible. It is considered as an objective, that usage of 40 per cent or higher might be attained.

The award will be made by a committee to be appointed by The Ontario Paper Company, Limited. Decisions as to the award and any interpretation of the rules and regulations governing the award when made by this committee shall be final.

### Rules and Regulations

1.) The award will be open for suggestions received before January 1st, 1945 and may, at the option of the Award Committee, be further left open until January 1st, 1946.

2.) The award is not limited to members of the Technical Section, Canadian Pulp and Paper Association, nor to Canadian residents. Executives of the Ontario Paper Company Limited and its subsidiaries, including Quebec North Shore Paper Company, are not eligible. Otherwise submissions from any source will be considered.

3.) The winning suggestion, and any other suggestions considered of sufficient merit, together with full submitted details of their application, will be published through the Technical Section, Canadian Pulp and Paper Association. Submission of any suggestion for the award will, by virtue of such submission, give permission to so publish.

4.) If the committee does not receive suggestions which it considers of genuine merit, it may decline to grant any award.

5.) The Ontario Paper Company, Limited does not claim any priority on the rights to the use of either the winning or any other suggestion. The prize is offered to stimulate the use of the woods mentioned in newsprint manufacture.

6.) All suggestions and correspondence should be addressed to the secretary-engineer, Technical Section, Canadian Pulp and Paper Association, 3420 University Street, Montreal, P. Q. It is requested that three copies of suggestions, preferably typewritten, be submitted.


GRUENDLER CRAFTSMANSHIP
*Serving Industry over 50 Years*

**For a Better Refined PULP**

**GRUENDLER "TURBO" REFINER**

**Saves on power up to 30%**

**Let us send you our Laboratory Reports and Bulletin**

**Actually Separates, Hydrates, and Combs Fibres—No disintegration and shortening of Fibres with this new method. Builders of WOOD-HOGS, STRAW and WASTE PAPER SHREDDERS**

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# LONGER LIFE

## For Equipment!

### Cut Maintenance Costs—Use Industrial Chromium Plating

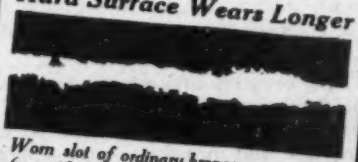
CRODON's exceptionally efficient protection against wear and corrosion insures substantial savings in your maintenance costs. Because chromium is the hardest commercial metal and completely non-corrosive, CRODON-plating prolongs the normal life of your equipment and reduces expenses incurred by frequent replacements, operating delays and interrupted production.

CRODON-plated equipment also insures better-quality products. More precise, better-defined results and more perfect finish are obtainable, due to CRODON-plating's unusually smooth, hard, easily cleaned surface. It also offers remarkable freedom from product contamination. Its new-equipment performance endures for surprisingly long periods.

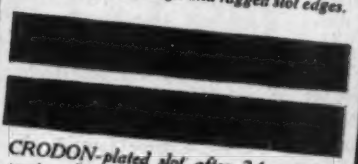
Look for the trademark CRODON — it assures you of the best in chromium plate. It guarantees top quality applied in the most practical, economical way — for behind every CRODON application are the expert knowledge, experience and resources of America's largest and oldest industrial chromium plating organization.

***Let us show how CRODON-plating can help you solve your maintenance and cost problems.***

**Hard Surface Wears Longer**

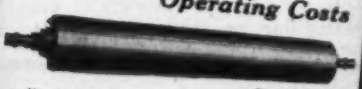


*Worn slot of ordinary bronze screen plate (magnified 10 diameters) after 10 months' service, showing rough and ragged slot edges.*



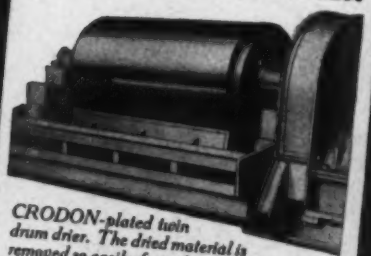
*CRODON-plated slot after 24 months' service. Note permanent slot accuracy, absence of wear and smoothness of slot edges.*

**Corrosion Resistance Cuts Operating Costs**



*Steel couch roll, 116 inches long — 20 inches diameter, CRODON-plated to resist corrosion.*

**Smoothness Insures Better Quality Product**



*CRODON-plated twin drum drier. The dried material is removed so easily from the glass-like surface that power consumption is greatly reduced and scraper knives last many times longer.*

CRODON PLATING pays

# CHROMIUM PLATING

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# ALLIED

## STARCH PLANT TO BE BUILT IN EVERGLADES

A diversification program for the Everglades to cost approximately $20,000,000 and provide year-round agricultural employment for more than 7,500 persons now is under way, Clarence R. Bitting, president of the United States Sugar Corporation, recently announced upon the occasion of the company's annual dinner, held at Clewiston, Florida.

The program embraces the erection of starch house buildings capable of producing 75 million pounds of starch annually, and includes a water supply system from Lake Okeechobee, a waste disposal plant, and steam generating facilities capable of doubling normal requirements.

The starch house will use 40 freight carloads of sweet potatoes or other roots and tubers in the daily production of a quarter million pounds of highest grade starches and their derivatives, together with sufficient by-product materials for the production of about half as much feed for livestock.

Work already has commenced on the water line, on the various buildings, and on the 145 foot water tower, designed to hold a quarter of a million gallons. Some units of the present construction program will be ready for operation within sixty days. Others will be ready each succeeding month, with completion of the power plant rounding out the entire program before October 1.

◆

## RESIN SPRAY DRYER

Rapid growth in the use of synthetic resins for paper manufacturing and protective packaging as a tool of war, places new emphasis on the recent development of one of the world's largest resin spray dryers by Resinous Products and Chemical Company, Philadelphia.

The new unit produces free-flowing powders out of liquid ureaformaldehyde resins. These powdered resins, which have twice the storage life of liquid resins, save on shipping costs, since they are light in weight and use lighter, less critical containers than the liquid types.

The vast capacity of this new resin-powdering unit was dictated by the ever increasing uses of synthetic resins. Liquid resin, pumped to the top of the four-story-high hot air chamber, is converted into a fog by the action of a highspeed centrifugal wheel, and falls to the floor as a fine powder. A revolving knife blade brushes the powder into ducts, then into collectors where air is removed, and conveyors carry the powder over screens and into shipping drums.

◆

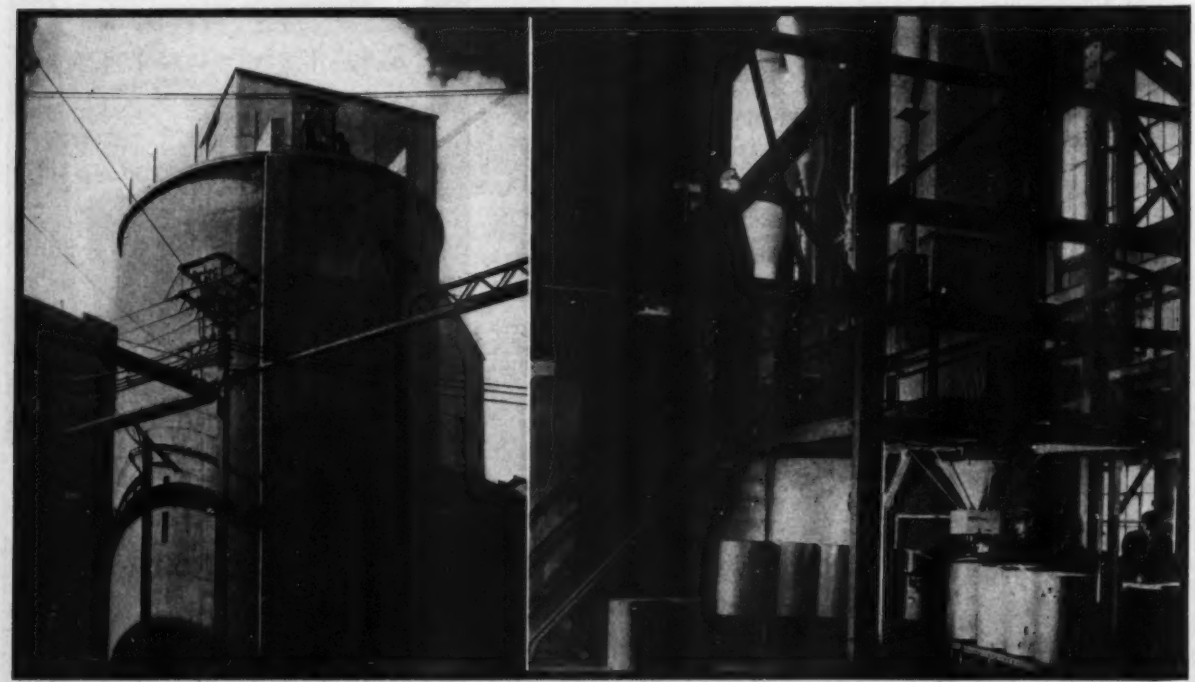
▶▶▶ A COMPLETE SEVERANCE of interests between the Revere Electric Manufacturing Company and the Revere Electric Supply Company, both of Chicago, is announced. Van N. Marker, president of Revere Electric Manufacturing Company, will devote his entire time to the furtherance of his company's activities. New president of the Revere Electric Supply Company, F. R. Eiseman, will further the interests of the supply company.

◆

## E. D. JONES & SONS REMODELING FOUNDRY

E. D. Jones & Sons Company, of Pittsfield, Massachusetts, recently announced the closing of its gray iron foundry after more than eighty years of continuous operation. (Cf. P. I. & P. W., Feb. 1944). The entire foundry personnel has been absorbed in other departments of the company.

Many changes in design of the company's papermaking equipment will



*LEFT—Exterior view of mammoth four-story high resin spray dryer, recently completed by Resinous Products & Chemical Co. at Philadelphia. At the top of the large chamber, liquid resin enters as a fine spray to be dried by superheated air. The huge size of this equipment is evident when compared with the men at the top of the tower. RIGHT—Interior view of the resin spray dryer shows filling of drums with Uformite 500. Directly over the filler may be seen the screens which insure absolute uniformity, through which the powdered resins pass and subsequently are packed in the shipping containers.*

# COTTRELL PROCESS

*of*

# ELECTRICAL PRECIPITATION

**universally recognized as a**
**standard method of removing**

**DUST, FLY ASH, FUME, MIST & FOG**

***from* GASES**

•

30 years of research, development and operating experience
throughout the world are incorporated in the

**COTTRELL INSTALLATIONS**

offered to meet the requirements
of any problem by

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NEW YORK CITY

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call for the use of new materials in place of iron castings formerly use. A considerable volume of castings, however, still will be required, and arrangements already have been concluded with long established nearby foundries who can give prompt service in supplying both gray iron and Meehanite castings.

The present foundry area is being remodeled for an assembly shop which will permit an extensive expansion of the company's output of equipment for the war effort. It also will provide an adequate area for the assembly of paper mill products, placing the company in an excellent position to serve the paper trade.

◆

▶▶▶ CLOSE RELATIONS between the J. W. Hewitt Machine Company, Inc., of Neenah, Wisconsin, and the Fox River Valley paper mills, have resulted in numerous bowling matches. The company announces that they still have several open dates and will welcome further tournaments.

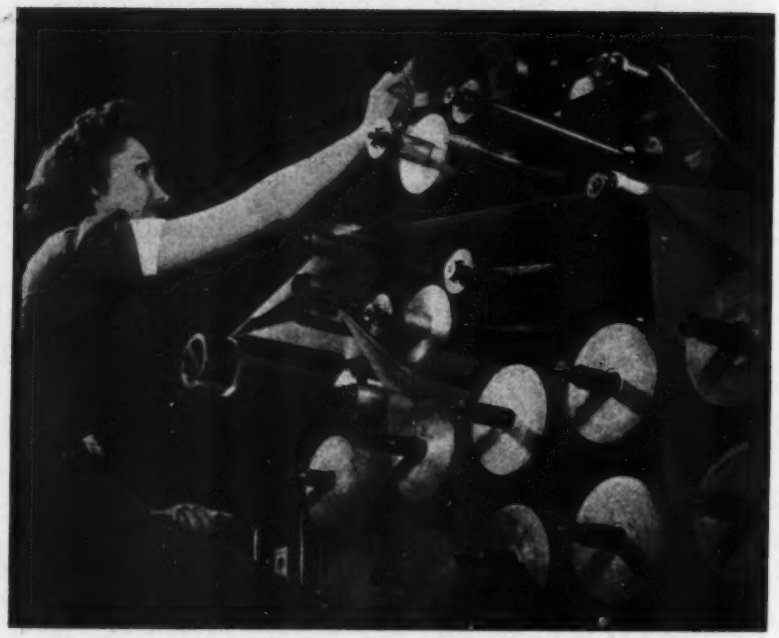
◆

## HARRIS-SEYBOLD-POTTER HAS USED MACH'Y DIV.

The establishment of a Used Machinery Division is announced by Harris-Seybold-Potter Company of Dayton, Ohio. The new department is located in Chicago and under the supervision of Ren R. Perry, formerly of Ren R. Perry, Inc.

*Ren R. Perry*

Used presses will be rebuilt in Chicago under factory supervision, and in instances where presses were not being used most effectively, the division will serve as a clearing house for the transfer of such equipment to points where maximum usage may be obtained.



***Electronic control has increased production of capacitors at Westinghouse and reduced spoilage of critical metal foil. Even a beginner operating this winding machine will produce as many capacitors in a day as 24 operators would make by hand-wound methods.***

▶▶▶ A NEW NAME has been given to Wishnick-Tumpeer, Inc., of New York City. This company, manufacturers and distributors of chemicals, pigments and asphalt products, now will be known as the Witco Chemical Company. No changes will take place in corporate structure, management or personnel. Based on the company's long established trade mark "Witco", the new name is descriptive of their business and in keeping with company activities in the fields of chemical research and manufacture, officials state. Witco Chemical Company is actively engaged in war work, its laboratories concentrating on the study and solution of synthetic rubber compounding problems.

◆

## SUGGESTIONS ARE REWARDED BY SANDY HILL IRON & BRASS

For valuable suggestions on methods of manufacture to increase production efficiency, $800 in war bonds and cash were awarded employees of the Sandy Hill Iron and Brass Works, Hudson Falls, New York, at a recent meeting of the Sandy Hill Club.

Gold buttons denoting membership in the Sandy Hill Club also were presented to those employees whose suggestions had earned bond and cash awards, while other club members submitting suggestions received silver emblems of membership.

The Sandy Hill Club is composed of approximately sixty company employees banded together to receive, consider and recommend meritorious improvements in new products, and in methods and processes of manufacture. Membership is open to all Sandy Hill employees who submit an acceptable suggestion.

Clayton Howe is president; Howard Freeman, secretary; and Arthur Langlois and Ernest Waters are co-chairmen of the suggestion committee.

## ARMY-NAVY "E" AWARDS

**Cochrane Corporation,** Philadelphia — This company arranged a unique setting for the ceremonies attending presentation of its "E" award for excellence which was given on February 15, in the main assembly shop of the plant. Four Marine Deaerators, ready for shipment on that day, made a striking background for the ceremonies, as the flat car on which they were bolted was halted on the tracks through the assembly shop, a blue curtain draped behind it and the speakers' platform with its flag staffs arranged before it. The pennant was presented by Commander Floyd B. Schultz, U.S.N., and received

by Percy S. Lyon, president and general manager of the corporation.

**Mixing Equipment Company,** Rochester, New York—Special ceremonies attending the award to this company of the "E" pennant were held at the plant February 5. Presentation of the award was made by Col. Frank J. Atwood, Chief of Rochester Ordnance District, War Department, who recommended the company for the award. Acceptance was made by Fred H. Gordon, Jr., president of the company. Dr. Mark E. Ellingson, president of the Rochester Athenaeum and Mechanics Institute, acted as master of ceremonies. Distinguished guests included Mahlon H. Gregg, district manager, WPB; and Andrew Ross, assistant director, Chemical Division, WPB. "E" pins for all employees were presented by Lt. Comdr. Douglas H. Elliott, USNR, Field Officer, Industry Co-operation Division, Office of Procurement and Material, Navy Department.

**Pittsburgh Piping & Equipment Company,** Pittsburgh — For Excellence in the production of products for the war program, this company was presented with the Army-Navy "E" award recently. Presentation ceremonies were held at the main plant February 25. The pennant was accepted from Major John H. Redmond, executive officer of Pittsburgh Ordnance District, Pittsburgh, by L. K. Hamilton, company president. Pins for the employees were presented by Commander Carl E. Egeler, U. S. Navy, assisted by Private Max E. McCarthy, wounded veteran of the Tunisian Campaign, Joseph Wojciak making the acceptance speech.

**White Star—(For Excellence)**

**DeLaval Steam Turbine Company,** Trenton, New Jersey — This company, one of the first manufacturing plants to receive the Navy "E" Burgee, has been awarded a Third "E" star, the third renewal for continued excellence.

**Babcock & Wilcox Company**—The Augusta (Georgia) and Barberton (Ohio) plants of this company's Refractories Division have been awarded stars for renewed excellence. The Augusta plant has received its second "E" renewal, while the Barberton plant has been granted a new "E" pennant with three stars affixed. The Barberton plant first won the Navy "E" flag in April, 1942.

**Warren Steam Pump Company, Inc.,** Warren, Mass.—This company was awarded the Army-Navy "E" pennant September 7, 1943. On March 3, the company was notified that it had been awarded its first star for continued excellence.

# TOMORROW'S NEWSPAPERS

## *via MORRIS Pumps*

**These stacks of pulpwood . . . and many, many others all over the country . . . will soon be converted into newsprint and other kinds of paper in mills equipped with MORRIS Centrifugal Pumps.**

**Today . . . as for two generations . . . MORRIS Pumps have made records of economy and efficiency in handling heavy pulp, liquors, chemicals, and clear water. Mills and chemical plants that have tried MORRIS Pumps quickly standardize on them . . . because of the authoritative recommendations of the long-experienced MORRIS engineers, the large line of MORRIS Pumps for every type of service, and the 80-year record of MORRIS Centrifugal Pumps for trouble-free service and low operating costs.**

*Write for Bulletins*

ST-P Non-clogging Pump
Guaranteed Non-binding for Pulpy Mixtures

Double Suction Horizontally Split Pump
for Clear Liquids

MORRIS
MACHINE WORKS
Baldwinsville, N. Y.

MORRIS
ESTABLISHED 1864

*Export Office:*
50 Church St.,
New York 7, N. Y.

**CENTRIFUGAL PUMPS**

## "STREAMBARKER" USED IN EASTERN PAPER MILL

Successful runs on practically all kinds and species of wood commonly used in the pulp and paper industry now have been made in an eastern paper mill, on the first installation of a new unit for barking and cleaning pulpwood sticks by the hydraulic method, the Allis-Chalmers Manufacturing Company of Milwaukee, Wisconsin, has announced.

Although the idea of barking logs and pulpwood sticks hydraulically is quite old, the new Allis-Chalmers machine, known as the Streambarker, represents the first practical application of this principle.

After many years of research and experimenting with the many problems involved, Allis-Chalmers engineers produced a machine to bark and clean pulpwood sticks in a process having many advantages. The unit can process from 10 to 11 cords of pulpwood per hour, and the number of men needed to operate it constitutes the smallest force required by any machine of its type and capacity. In addition, the savings in good pulpwood resulting from the elimination of broom ends, unnecessary axe cuts and knot boring, help to make the operation exceedingly practical.

Simple, functional design, which characterizes the unit, has resulted in its being called the "Streambarker." It has large waterproof doors on each side of the outer frame for quick accessibility to the interior and is floodlighted from the inside so that logs can be observed while they pass through the machine.

With the first machine in daily operation for more than a year, the Streambarker is ready for application throughout the industry, according to Allis-Chalmers engineers.

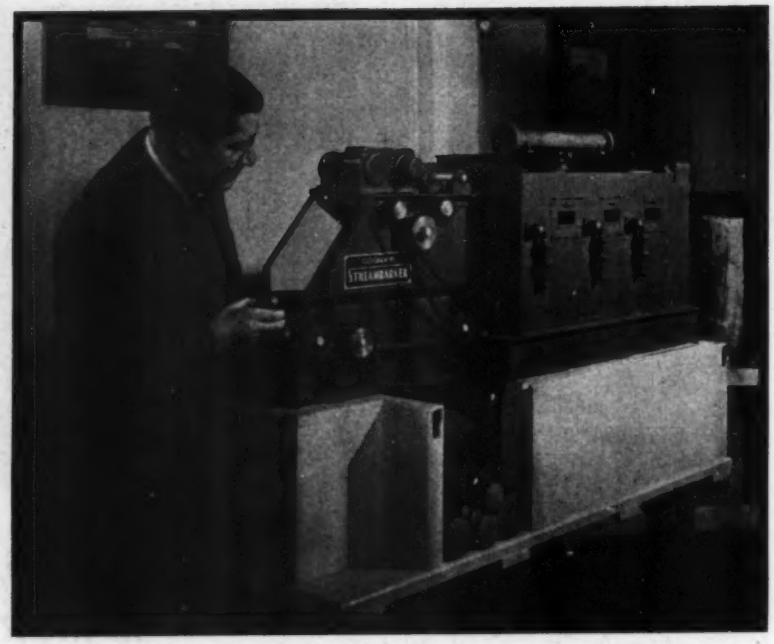
◆

## G-E MOTOR-GENERATOR OUTPUT UP IN 1943

Electric motors and generators having total horsepower equivalent to the muscle power of more than 100 million men were produced by the General Electric Company of Schenectady during 1943, W. H. Henry, manager of the company's motor division, stated recently.

The year's total of 7,200,000 horsepower was more than four times the output for 1939. Included in this production were hundreds of thousands of small lightweight motors and generators for bombers, fighters and cargo planes. More than 3 million horsepower was in the form of large motors, many of them propulsion types, for Navy escort vessels, tankers, tenders, and submarines. Another motor with a maximum torque of more than 4 million foot-pounds was designed and built for a steel mill.

The manufacturing output of the company's 13 motor factories has kept pace reasonably well with incoming motor orders, but where demands exceed production facilities are being increased to meet these demands as rapidly as possible.



*Allis-Chalmers announces its "Streambarker" is ready for application throughout the industry.*

◆

## B. F. GOODRICH CO. MAKES NEW BELTING OF SYNTHETIC RUBBER

Belting made with the new synthetic rubber from government plants (known as GR-S synthetic rubber) can be joined to natural rubber belting with a vulcanized splice, it is announced by The B. F. Goodrich Company. This makes it possible to use sections of the new GR-S synthetic belting to repair existing belting when needed.

The company's standard splicing and repair materials can be used with the new GR-S synthetic belting, using the same directions given in the manual on repairing and splicing belting.

◆

## NEW ORGANIZATION FOR WHEELCO INSTRUMENTS

Purchase of the assets of Wheelco Instruments Company, Chicago, by Fred A. Hansen and Cary H. Stevenson, vice presidents of the Lindberg Engineering Company, Chicago, and several unnamed associates, is announced. Although under new corporate management, the company will continue to operate at the same location and be known as the Wheelco Instruments Company.

Officers of the new company are: Fred A. Hansen, president; Cary H. Stevenson, secretary and treasurer. Richard Schoenfeld and Theodore Cohen, vice presidents of the old company, will continue in that capacity, with Mr. Schoenfeld in charge of sales and production.

Mr. Hansen and Mr. Stevenson will continue active in the management of the Lindberg Engineering Company.

◆

## NEW BASIC INDUSTRIES DEPT. ORGANIZED AT ALLIS-CHALMERS CO.

A new Basic Industries Department has been established by Allis-Chalmers Manufacturing Company, Milwaukee, to correlate activities of departments formerly operating independently. It embraces the crushing, cement and mining machinery division, flour milling and oil extraction division, and saw and pulp mill division. Walter Maxson, former manager of the crushing, cement and mining division, has been appointed manager of the Basic Industries Department.

Coincidental with this announcement comes the establishment of a separate Texrope Department under the supervision of T. C. Knudsen, manager and chief engineer.

# SAFETY

## COLORED FILTERS DEVELOPED BY MINE SAFETY APP. COMPANY

A new development in the field of respiratory safety is represented by three colored filters for M.S.A. Comfo and Dustfoe respirators, developed by Mine Safety Appliances Company. Each type has its own distinctive color and is designed for use with modern dust respirators. The color shows through the transparent containers and permits immediate inspection of the filter-type employed without removal from the respirator.

The filter-type constantly is within view of the worker, foreman and safety inspector, helping to insure correct filter-use for each type of job.

Filters furnishing the Bureau of mines with approved protection against all dusts are light red in color. Light green indicates protection against fibrosis-producing dusts and mists. Gray is the color of the M.S.A. Comfo Metal Fume Respirator Filter, used only in the Comfo, for protection against toxic fumes from molten metals.

Further details are available from Mine Safety Appliances Company, Braddock, Thomas and Meade streets, Pittsburgh 8, Pa.

◆

## SAFETY SCORES

▶▶▶ IN THE ANNUAL Paper Industry Safety Contest which began July 1, 1943, reports received for January show eleven mills maintaining a perfect record:

**Division I—Pulp and Paper Mills**

**Group A—(None)**

**Group B—**

St. Croix Paper Co., Woodland, Me.

**Group C—**

Strathmore Paper Co. (Woronoco Mills), West Springfield, Mass.

**Group D—**

Marathon Paper Mills Co., Rothschild, Wis.

Spaulding Fibre Co., Inc., North Rochester, N. H.

International Paper Co., Riley, Me.

**Division II—Paper and Board Remanufacturing**

The Flintkote Co., Rutherford, N. J.

Thilmany Pulp & Paper Co. (Bag Mill), Kaukauna, Wis.

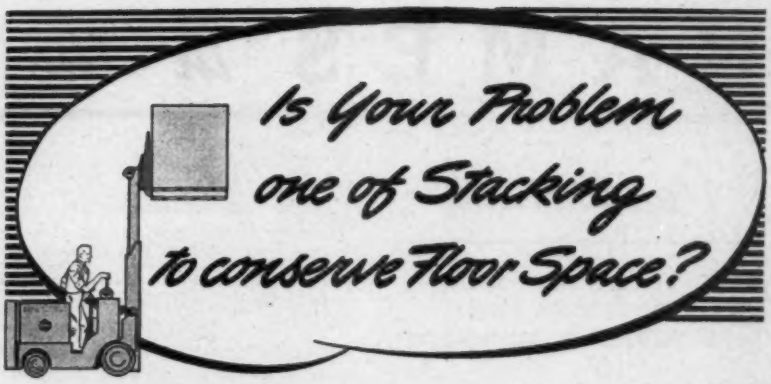
Kimberly-Clark Corp. (Atlas Mill), Appleton, Wis.

Bird & Son, Inc., Shreveport, La.

South West Box Co., Sand Springs, Okla.

Bay West Paper Co., Green Bay, Wis.

The paper industry safety contest is conducted among member mills of the Paper and Pulp Section of the National Safety Council, and runs for twelve months. The present contest covers the period July 1, 1943; to June 30, 1944.


Hundreds of plants and warehouses have solved this and other material handling problems with Baker Trucks. So that you may profit from their experiences, a large part of our new catalog has been given over to actual installation stories. A few cases in point are listed below:

★ ★ ★

A leading industrial engineer was given the job of designing a large model warehouse for the world's largest paint manufacturer. Baker Trucks and Tractors were specified to bring about top efficiency in the sorting, storing and shipping of the more than 10,000 items handled in this warehouse. Illustration shows one of their fork trucks stacking pallet loads of drums three-high.

One of the problems confronting the planners of this warehouse was to find a way of getting at "buried" loads with a minimum of time and effort. This was solved by steel racks—permitting the fork truck to remove the lower pallet without disturbing cartons above.

A large west-coast processing plant saves thousands of dollars annually through the use of telescoping lift trucks. The Baker Fork Truck illustrated is tiering heavy pallet loads three- and four-high to conserve warehouse space.

In paper mills, print and publishing shops, Baker Trucks have more than doubled the value of warehouse space by permitting stacking to the ceiling. Reductions up to 80% in handling costs are reported. One publisher paid for his truck in 18 months' rental savings alone.

A Baker Material Handling Engineer was called in to make a survey of a large food warehouse. Upon his recommendations, a fork truck plus a conveyor system was installed. Operating costs were reduced from 6.68c to 4.98c per ton, a saving of 25.4%. Gross savings amounted to $153 per week or $7956 per year.

The problem of stacking steel sheets has been successfully met in steel mills and metal working plants through the use of heavy duty fork trucks, handling sheets on pallets—or equipped with rams for handling heavy rolls. A special roll-over attachment tiers rolls either vertically or horizontally.

**WRITE FOR YOUR COPY**

Plant and production managers, traffic managers, superintendents, purchasing agents and any others concerned with material handling will find the new Baker Catalog No. 52 a valuable reference.

**BAKER INDUSTRIAL TRUCK DIVISION**

*of The Baker-Raulang Company*

**2169 WEST 25th STREET • CLEVELAND, OHIO**

*In Canada: Railway and Power Engineering Corporation, Ltd.*

**Baker INDUSTRIAL TRUCKS**

# NAMES *in the* NEWS

## *Personals*

### L. M. YOERG HONORED BY ASSOCIATES FOR 50 YEARS IN INDUSTRY

In recognition of his fifty years' service with the pulp and paper industry, Leon M. Yoerg, president of the American Writing Paper Corporation, Holyoke, Massachusetts, was honored at a luncheon tendered him in the Chrysler Building, New York, during paper convention week, and presented with a gold capped pen and pencil set by his company associates.

Mr. Yoerg became a paper mill apprentice at the age of thirteen. After serving thirteen years with the Hampshire Paper Company he was transferred to the Carew Manufacturing Company, an affiliate of Hampshire. He was made superintendent at the age of 26 and later became plant manager. Mr. Yoerg resigned this position in 1923 to become vice president of American Writing Paper Corporation and was elected president of the company in 1937.

Among his associates attending the luncheon were: Thomas H. Blodgett, chairman of the board; L. E. Pritchard, director; Peter Freedman, comptroller; Edward C. Reid and James H. Sweet, vice presidents; William J. Norton, treasurer; Fred A. Curtis, sales manager; and Charles L. Kirkpatrick, secretary.

◆

### SWEDISH TECH. ASS'N HONORS RALPH ROE

At an informal dinner given by the Swedish Cellulose Industry on February 14, Ralph B. Roe, technical director of the Sorg Paper Company, Middleton, Ohio, was honored by the Swedish Technical Association.

The dinner, which was attended by some sixty representatives of the American paper industry, was presided over by Goesta A. Hall, member of the Swedish Trade Mission and delegate of the Swedish Cellulose Association. Mr. Hall gave an interesting review of some aspects of the Swedish pulp industry, and in the course of the evening, acting on behalf of the Swedish Technical Association, presented Mr. Roe with a leather bound, handsomely inscribed testimonial, and a gift in the form of a vase of handmade etched crystal glass, the product of a famous Swedish glass works.

In his presentation remarks, Mr. Hall called attention to the chlorine consumption method published by Mr. Roe in 1924, and subsequetly modified by Genberg and Johansson. The Johansson modification has been in extended use throughout the Swedish pulp industry for several years, and because of the general application and use of the Roe Chlorine Number, the presentation was made.

◆

▶▶▶ *Paul C. Staake* is western sales representative for Bulkley, Dunton Pulp Company of New York. Mr.

*Paul C. Staake*

Staake, a former partner in the advertising firm of Staake-Schoonmaker, Kalamazoo, Michigan, will headquarter at the company's Chicago office.

◆

### E. NORVAL HUNTER GOES TO ESPANOLA TO WORK FOR KVP

To accept the position of assistant to the president of Kalamazoo Vegetable Parchment Company, E. Norval Hunter has resigned from the Great Lakes Paper Company, Fort William, Ontario. Mr. Hunter already has taken up his work at Espanola, Ontario, where the KVP Company's Canadian property is located.

Mr. Hunter's appointment is in line with the KVP plan of transforming the former newsprint mill at Espanola into a sulphate pulp plant, since the Great Lakes is a sulphate production property. The new executive will have charge of repairs and replacements at Espanola and will supervise operation of the power plant which is part of the property acquired by the Kalamazoo, Michigan concern.

The mill at Espanola formerly was owned by the Abitibi interests but was purchased for them by KVP in January, 1943 (Cf. P. I. & P. W. January, 1943).

◆

### CONSOLIDATED CO. PROMOTES PLZAK

Well known for his work in accident prevention, J. J. Plzak, who has served as claims manager and safety director of the Consolidated Water Power & Paper Company, Wisconsin Rapids, Wisconsin, since 1927, has been promoted to the Sales and Service Department of the company's Plastics Division.

For seventeen years Mr. Plzak has also served as superintendent of the Employes' Benefit Association of the Consolidated company, and when his transfer necessitated that he give up this work, special honors were shown him at the annual meeting and dinner of the Association February 21. This Association includes workers in all divisions of Consolidated, including the plants at Wisconsin Rapids, Biron, Stevens Point, and Appleton, as well as those engaged in the Canadian operations of the Ahdawagam Paper Products Company. Since Mr. Plzak assumed leadership of the E. B. A. the membership has been practically trebled.

Succeeding Mr. Plzak as manager of claims and safety is George Nelson, who for the past ten years has been safety consultant for the Federal Works Administration with headquarters at Madison, Wisconsin.

◆

▶▶▶ New Pacific coast sales manager of mechanical goods for United States Rubber Company, New York, is *W. S. Long*, former operations manager of the company's Los Angeles plant. Mr. Long remains in charge of war products activities on the Pacific coast. *J. M. Miller* continues as factory manager of the Los Angeles plant.

◆

▶▶▶ General Manager of the Brompton Pulp and Paper Company, Bromptonville, Quebec, *F. H. Scowers* now has been elected a director of that company and a director of the St. Lawrence Paper Mills Company, Inc., Montreal.

● *Built by Shartle Bros. Machine Co., Division of the Black-Clawson Company.*

# "Always on the job!"

Refining 1000 gallons of paper stock per minute at 1800 r.p.m. with this Hydrafiner is one job that isn't held up because of bearings overheating or otherwise falling down. The bearings are SKF—the reason for constant smooth-running at high speeds . . . for long life . . . for maintained setting of the plug . . . for bearing *response* while this machine handles stock up to 6% consistencies. Where machines are responsible for longtime performance, their bearings invariably are SKF's. 5515

**SKF INDUSTRIES, INC., PHILADELPHIA 34, PA.**

## JOHN F. RHOADES NOW ASSOCIATED WITH JOHNSON AND WIERCK

A new associate of Johnson and Wierck, Inc., consulting engineers for the pulp and paper industry, New York, is John F. Rhoades, chief engineer of The Mead Corporation, Chillicothe, Ohio, for the past twenty-three years.

*John F. Rhoades*

Mr. Rhoades' activities with The Mead Corporation embraced the construction of several large pulp and paper mills and allied developments now owned by that corporation, throughout the United States and Canada.

At one time he was connected with the Management Engineering and Development Company, Dayton, Ohio, having joined that organization when it was founded in 1919.

◆

▶▶▶ A new location is announced for *Frederick H. Heiss,* chemist for American Cyanamid Company, Calco Chemical Division, who has been transferred from the company's home offices at Bound Brook, New Jersey, to the Chicago sales office, where he will be concerned with the sale and service of its products to paint, printing ink and pigment consumers.

◆

▶▶▶ *Dr. E. P. Bagg* was elected president of the Parsons Paper Company, Holyoke, Massachusetts, at the annual meeting of stockholders held on February 23.

◆

▶▶▶ A senior member of the naval staff, Commander *K. S. Maclachlan,* R.C.N., helped to plan the naval side of the Allied landings at Anzio, Italy, sharing in the attack which opened on January 22. Upon his return to London, Commander Maclachlan unexpectedly met his two sons, Peter, a midshipman, and Alan, a lieutenant in the R. C. N. Prior to the War, Commander Maclachlan was president and general manager of Fraser Companies, Ltd., Edmundston, N. B.

◆

## GEORGE McGREGOR IS NOW WITH SWENSON

Until recently senior chemical engineer in the Pulp and Paper Section of the United States Forest Products Laboratory, Madison, Wisconsin, George H. McGregor has joined the staff of Swenson Evaporator Company, Division of Whiting Corporation, Harvey, Illinois, in the capacity of manager of their pulp mill equipment department.

Mr. McGregor will have charge of sales of Swenson equipment for the paper and pulp industry, including complete black liquor recovery systems, evaporators, pulp washers, etc.

A graduate of the University of Wisconsin, Mr. McGregor has had many years' experience in the paper field as instructor, technical director and superintendent of operations.

◆

▶▶▶ *Stephen H. Florio* is the New England sales representative of the Detroit Wax Paper Company, having resigned his position as sales manager of the wax paper division of the American Tissue Mills, Holyoke, Massachusetts, to accept his new appointment. He will continue to reside in Holyoke, Massachusetts, from which point he handled the American Tissue Mills' interests.

*Stephen H. Florio*

## W. H. FELDMANN NOW PRESIDENT ELECTRIC MACHINERY MFG. CO.

Vice president and general manager of Electric Machinery Manufacturing Company, Minneapolis, since 1940, W. H. Feldmann now has been elected president and general manager.

*W. H. Feldmann*

Silas McClure, president since 1921, was elected chairman of the board of directors.

Mr. Feldmann has been associated with the company for twenty-two years. Prior to his appointment as general sales manager in 1927 he was in charge of district sales at Cleveland and Chicago. In 1936 he was elected a director of the company and in 1937 was made vice president in charge of sales.

◆

▶▶▶ The appointment of *Henry S. Haight* as representative in the State of North Carolina is announced by the Baker Industrial Truck Division of The Baker-Raulang Company. Mr. Haight operates under the name of the Haight Engineering Company, maintaining offices at Moore Street and Altamount Avenue, Richmond, Virginia.

◆

▶▶▶ Incoming sales manager for the Crocker-Wheeler Division, Joshua Hendy Iron Works, Ampere, New Jersey, is *Lyman W. Warner,* who has been assistant sales manager since 1941. Prior to his connection with Crocker-Wheeler, Mr. Warner was associated with the Ingersoll-Rand Company and the General Electric Company in Schenectady, New York, and Chicago.

CHEMICALS CORPORATION

# . . . one of the world's great producers of basic chemicals

CAUSTIC SODA
CALCIUM CHLORIDE
SODA ASH
CHLORINE
DRY ICE
BICARBONATE OF SODA
CALCIUM CARBONATE
AROMATIC INTERMEDIATES
HYDROGEN

MICHIGAN ALKALI DIVISION • Wyandotte, Michigan

▶▶▶ *C. B. Allen* of The Reliance Electric and Engineering Company, Cleveland, has completed his assignment with the Bureau of Ships, Navy Department, Washington, and returns to duty with his company. He has been transferred to their Detroit district as application engineer.

◆

▶▶▶ Assistant to the vice president is the new title of *Dwight R. Means* of the Pittsburgh Plate Glass Company (Columbia Chemical Division). Mr. Means has been affiliated with the company for the past twenty-one years, and prior to his new appointment served as technical director.

◆

▶▶▶ The appointment of *Myron M. Eichor* as works manager for the Jessop Steel Company, Washington, Pennsylvania, is announced by the company. Mr. Eichor succeeds Harry Wilson, Jr., who recently was made vice president in charge of operations.

***Myron M. Eichor***

◆

▶▶▶ Abrasive division district manager for the Pacific Coast, is the new position now held by *Philip H. Clapp*, according to an announcement by Norton Company, Worcester, Massachusetts. Mr. Clapp has been with the company for thirty years, and prior to his new appointment was abrasive division district manager for Detroit.

◆

▶▶▶ At the annual meeting of the Engineering Institute of Canada, held in Quebec toward the middle of February, *E. B. Wardle*, of the Laurentide Division of Consolidated Papers Corporation at Grand'Mère, Quebec, was elected one of six new vice presidents.

◆

▶▶▶ Effective March 1, *T. K. Davis* of Price and Pierce, Limited, will become associated with Hollingsworth and Whitney Company of Boston, and will headquarter at the company's New York sales office.

Mr. Davis has been connected with the paper industry since 1914, and was sales manager of Nashua River Paper Company from 1930 to 1942.

◆

▶▶▶ After spending fifteen months as chief of the packaging section in the tank, automotive center office of the Chief of Ordnance, Detroit, *P. L. Dafoe* has returned to his position as manager of the Central Division of Acme Steel Company, Chicago.

◆

▶▶▶ For many years associated with leading paper mills in the Connecticut Valley, *Paul W. Bidwell* now has been appointed manager of the Chicopee (Massachusetts) branch factory of American Bosch Corporation.

# Necrology

## WILLIAM CLAYTON NASH

William Clayton Nash, 81, inventor of numerous paper products, passed away in Appleton, Wisconsin, on Wednesday, February 9.

Mr. Nash, assisted by his son, the late William Morgan Nash, developed the William C. Nash and Sons Company, which was organized to promote research and develop patents related to the paper industry. The senior Mr. Nash was the originator and perfector of the rag content papers manufactured by the Gilbert Paper Company of Menasha, the firm in which he was employed from 1892 to 1911.

Mr. Nash was born at Fort Union, Ohio, on October 10, 1862, and started his career in the paper industry as early as 1878 in Franklin, Ohio, where he worked in a rag room for 75 cents per day. While working at the Meade Paper Company in Ohio in 1890, Mr. Nash was offered employment by the Gilbert Paper Company, and a year later went to work for the latter concern in Menasha. In 1911, with the aid of L. T. Jourdain, Mr. Nash founded the Lakeside Paper Company, which he operated until 1921. Two years later he put into operation the Telulah Mill for the Fox River Paper Company in Appleton. From 1925 to 1930, he devoted his efforts to the perfection of wire, wet felt, dryer felt guides for paper machines.

In 1930 Mr. Nash assisted the Seaman Paper Company in the development of its insulation product, known as Seapak.

It was in 1900 that Mr. Nash conceived the modern paper machine, perfecting the single palm tender which made possible the modern wide deck machine. It was also in this same year that he perfected the first encased vacuum roll, the forerunner of the recently issued patent covering the original principle. He also developed the original impression watermark, as well as advancing and patenting 36 other improvements in paper making and machinery applicable to it.

◆

## JOHN E. A. HUSSEY

For many years actively associated with the New England newsprint and paper mill industry, John E. A. Hussey passed away at his home in Brookline, Massachusetts, on January 27 at the age of 82.

Mr. Hussey at one time worked for the Russel Paper Company. In 1886 he joined the Glen Manufacturing Company, leaving them in 1898 to go with the International Paper Company. He was made assistant sales agent and continued in that position. He is survived by a daughter.

◆

## HENRY DAY BRIGHAM

An executive of Crane and Company, Dalton, Massachusetts, Henry Day Brigham passed away at his home in Pittsfield, Massachusetts, on February 1. He was 62 years of age.

Following his graduation from Trinity college in 1903, Mr. Brigham joined the organization of Eaton, Crane and Pike Company. Later, he was made vice - president, and remained with the firm following its reorganization as Crane and Company in 1932.

He is survived by his widow, two sons and two daughters.

◆

## RALPH J. HUMES

Well known throughout the east, Ralph J. Humes passed away on January 28 at his home in Holyoke, Massachusetts.

Mr. Humes formerly was associated with the American Writing Paper Company. In 1939 he was made sales manager for the Morart Paper Company, and in 1941 he joined the Hazen Paper Company of Holyoke as their New England sales representative.

◆

▶▶▶ Word is received from Cyrus Field Logan, of Washington, D. C., that his wife, *Ada Logan*, passed away at their home in Washington, February 5. Mr. Logan's article, "Reminiscenses of an Old Timer," appeared in the August, 1942, issue of this magazine.

SIMPLICITY OF DESIGN MEANS EASIER MAINTENANCE . . .

# GOOD VALVE CARE is just good business

NOW, especially, when the demand for valves is taxing deliveries, it is imperative that you make your present valves last longer and serve better.

It's a challenge to every maintenance man to keep an eagle eye on the valves he now has in service . . . to see that they are checked and serviced regularly and thus forestall, as far as possible, the need for new valves.

Lunkenheimer Valves are easy to keep in good condition. Simplicity of design, with a minimum of working parts, makes them readily accessible for inspection and maintenance follow-up.

Let your Lunkenheimer distributor help you with your maintenance, repair and operating problems. His facilities and experience are at your call.

ESTABLISHED 1862
THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI 14, OHIO, U. S. A.
NEW YORK 13 CHICAGO 6
BOSTON 10 PHILADELPHIA 7
EXPORT DEPT., 318-322 HUDSON ST., NEW YORK 13, N. Y.

*It fits perfectly . . .*

One body takes either the rising stem or non-rising stem trim assembly. A timely feature when it's necessary to convert from one type to the other. Simply loosen the trim assembly and lift out. The body remains in the line.

## LUNKENHEIMER VALVES

▸▸▸ Formerly special advisor on national unity for the National Selective Service in Canada, *Percy A. Robert*, M.A., Ph.D., passed away February 12 at the age of 39. He was employed by Gaspesia Sulphite Company, Chandler, Quebec.

◆

## MURRAY M. RUBIN

The unexpected passing in Springfield, Massachusetts, on February 25, of Murray M. Rubin, director of research and development for the American Tissue Mills at Holyoke and South Hadley, deprives the entire industry of a nationally known authority in the field of pulp and paper developments. He was 41 years of age.

Well known as a consulting chemical engineer, Mr. Rubin was associated with the paper industry since his graduation from Harvard in 1925. Prior to joining American Tissue Mills he was connected with the Mohawk Paper Mills in Troy, New York, for several years. A member of several professional associations, he was the author of many informative articles in technical journals. Mr. Rubin had been a contributor to this magazine. His most outstanding contribution was the article "Spots and Specks," prepared in collaboration with his brother, Milton L., especially for THE PAPER

*Murray M. Rubin*

INDUSTRY AND PAPER WORLD, and published in the July, 1939, issue of the magazine.

Mr. Rubin attended the recent New York convention of the Technical Association of the Pulp and Paper Industry and allied groups, and was actively engaged at his office until February 21, upon which date he was taken ill at his home.

He is survived by his father, Joseph S. Rubin, and three brothers.

◆

## JAMES H. MacMAHON

Widely known in the paper industry and other chemical consuming fields, and for many years an affiliate of Mathieson Alkali Works, James

*James H. MacMahon*

H. MacMahon passed away at his home in Buffalo, New York, on February 7 at the age of 83.

Mr. MacMahon's early days were spent in England, and in 1897 he returned to the States to associate with the Castner Electrolytic Alkali Company, a subsidiary of the Mathieson Company. In 1918 Mr. MacMahon was made manager of Mathieson's Saltville (Virginia) plant and in 1921 became technical representative in charge of development work, retaining this position until his retirement in 1935.

In addition to his managerial duties, Mr. MacMahon played an active part in gaining acceptance for American-made bleach, and in the conversion of bleaching powder into liquid chlorine among the paper mills.

His passing closes a career intimately associated with the paper and chemical industries.

◆

## WINTHROP L. CARTER

President of the Nashua Gummed and Coated Paper Company, Nashua, New Hampshire, Winthrop L. Carter passed away at his home in Chestnut Hill, Massachusetts on February 22 at the age of 58.

A graduate of Yale, class of 1907, Mr. Carter went to Nashua that same year. In 1909, he was made treasurer of the Nashua Gummed and Coated Paper Company, and upon the passing of his father in 1923, succeeded him as president.

Mr. Carter was connected with a number of organizations in the industry and its affiliates. He was president of the Nashua Package Sealing Company, the Canadian Nashua Paper Company, and the Canadian Sealright Company. He was a director of Carter, Rice & Company Corporation of Boston, the Berwin Paper Corporation of Dansville, New York, and the Gummed Paper Manufacturing Company, Ltd., of Leicester, England.

In national affairs, Mr. Carter had been an outstanding personality. He was a past president of the American Paper and Pulp Association, had been a director of the National Association of Manufacturers, and had served as an industrial advisory member of the War Production Board.

His widow, one son and two daughters survive.

◆

## IRWIN H. COPELAND

Vice president of the New Brunswick International Paper Company, Dalhousie, New Brunswick, and manager of manufacturing operations for Canadian International Paper Company, Montreal, Quebec, Irwin Henning Copeland passed away unexpectedly in North Miami, Florida on February 28.

His life long association with the

paper industry started with Finch, Pruyn and Company, Inc., Glens Falls, New York. Later, he moved to Canada, occupying successively posts of increasing responsibility with several companies until 1929, at which time he joined Canadian International Paper Company as assistant manager of its Three Rivers, Quebec, mill.

He leaves his widow, Elizabeth, and a son, Sergeant William H., who is serving with the R.A.F. overseas.

◆

## LAWRENCE WELLS CASE

President and treasurer of Case Brothers, Inc., Manchester, Connecticut, Lawrence Wells Case passed away on February 16 at the age of 73.

Following graduation from the Massachusetts Institute of Technology, Mr. Case entered the employ of the firm founded by his father and uncle, eventually becoming president of the organization.

He is survived by his widow; a son, A. Wells Case, in the USNR; and one daughter.

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▶▶▶ Injuries sustained in an automobile accident caused the passing of *Mrs. Marjorie Nelson Howard,* wife of Phil A. Howard, president of Howard Publishing Company, Chicago, on March 5, 1944. Mr. Howard is well known as publisher of the *American Paper Merchant* and *The Converter.*

◆

## WILLIAM GROVER CHAPIN

William Grover Chapin, who pioneered in the design of corrugated paper manufacturing machinery and was vice president of the former Thompson and Norris Company, Brooklyn, New York, paper manufacturers, passed away February 25 in Rockville Centre, Long Island, New York, at the home of a son, Lester G. Chapin, with whom he lived. He was 85 years of age.

Associated for forty years with Thompson and Norris Company, Mr. Chapin retired in 1927 when the concern was absorbed by Hinde and Dauche Paper Company, of Sandusky, Ohio. When he joined the company, of which he also became superintendent and secretary, little machinery for the manufacture of corrugated paper had been developed. He designed much of the machinery and equipment aiding the growth of the industry. He was graduated from Sheffield Scientific School of Yale University in 1878.

Besides the son with whom he made his home, Mr. Chapin also leaves his widow, Mrs. Janette Alexander Chapin, and two other sons, Stanley Wallace and Harry Alexander.

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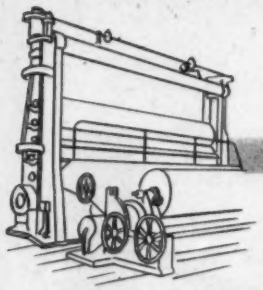
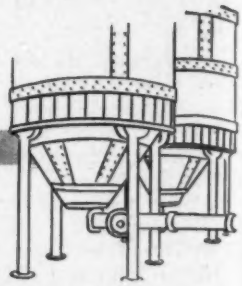


# Practical SHORTS



***Readers are invited to submit short, practical articles for this department. The items should be original and should relate to ways and means of handling production and maintenance jobs. Where possible, articles should be illustrated. Rough sketches only are required. Payment will be made for acceptable items upon publication.***

## Technique of Using Blow Torch

Your blow torch burns the vapor generated when the gasoline is boiled in the under-vein. That's why complete generating is so important—a full drip-cup should burn dry, shielded from drafts. A spurting torch is not generated.

When carbon-clogged, clean the passages carefully with the correct drill. Then wash in gasoline and blow clean.

Never use a sharp metal instrument to clean out the orifice. You'll enlarge it, sure, and ruin the flame, if not the burner.

To test your torch without lighting (Figure 1), point into a container. If a fine pin-stream of gas sprays out, your torch will burn when properly generated.

Your best insurance is clean, white, unleaded, uncolored gasoline. The filler plug (or pump) must be clean when replaced after filling.

Frequently empty the tank and wash with clean gasoline.

The wick is very important—it "picks up" the gasoline, filters out dirt, and keeps the torch from "pulsing." Replace if it is hard or matted.

To get wick back into tank: twist it, then push through the burner inlet with a screw driver.

Be sure that the pump check is clean and that it seats firmly.

Don't "over-pump"—30 strokes for starting pressure plus 10 more after lighting, should be plenty to start (Figure 2).

Always back out the needle valve about ⅛ turn after shutting off the torch. This prevents "jamming" when the burner cools.

Never leave your torch burning against a pipe or other surface. Radiated heat will build up dangerous pressure.—THE TURNER BRASS WORKS.

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## Inspect Your Rope Frequently

Before using rope on any job, inspect it, throughout its entire length, for external wear, broken or cut fibers, variations in size or roundness of strands, discoloration and rotting. Look for black or rusty-brown spots. If these or other suspicious-looking areas are noticed, unlay the strands and note condition of the newly exposed fibers. If the inner yarns are bright, clear and unspotted the rope strength has not been weakened. If the strands appear damaged, unwind an eight or ten-inch piece of yarn and break it in your hands. If it breaks easily, the rope is unsafe and should be discarded.—*Dutch Boy Painter Magazine.*

◆

## Streaks in Paper

Too much water added to the sheet at the slices will cause streaks in any grade of paper. Non-sized papers, such as newsprint, seldom streak on a machine; sized papers often streak.

Some mills have tried to save size by eliminating the showers on the wire. Not only does this practice tend to cause streaks in the sheet, but makes bubbles as well. Fresh water in the wire showers under conditions of this kind is the only remedy for the trouble.

Paper made on a machine with a short apron may streak. The streaking in a case of this kind is caused by water, held in the meshes of the wire, being released by the wire as it encircles the breast roll. The installation of a doctor with a rubber lip will remedy this trouble. The doctor should be installed beneath the shoe to which the apron is attached. It should be set at an angle of about 45 degrees with the lip in contact with the wire.

A heavy-sized sheet will streak if the perforations in the cover of the first suction box are too large. Substituting a cover with smaller holes for the cover giving the trouble or using a slotted cover in its place will help this condition. Another way to handle this trouble is to rabbet the cover of the box.

If the deckle remains permanently in one position, that is, is never shoved in or pulled out, the groove may extend from edge to edge of the sheet. However, if the deckle is pulled out or shoved in from time to time, the groove should extend the full length of the cover.

The rabbet should be about one inch wide and one-quarter of an inch deep. It should be located to include the first row of holes on the side nearest the breast roll.

When the groove extends the full length of the cover, it is necessary to inlay strips of wood in the groove outside the edges of the sheet (one strip on each side of the cover). The strips need not be fastened as they will not come out unless the box is taken from the machine.

The idea of the groove is to form a vacuum chamber over which the wire will draw. The strips are used to prevent air from finding its way into the chamber from outside the sheet edges.

The chamber being small may fill up at

times; and, if it does, a streak will show up immediately over the spot that is filled. To clean the chamber, all that is necessary is to play a pressure hose on the wire immediately above it at any time stock is off the wire.—ARCHIE MCCAFFERY.

◆

## Pitting or Rusting of Calender Rolls

Most mills that use water on their calender rolls to produce water finish paper have experienced a great deal of trouble from the surface of the rolls becoming pitted or corroded, necessitating frequent regrinding. This trouble has been found to be more pronounced in some mills than in others producing the same grade of paper, which is difficult to understand. Apparently it is caused by impurities in the water, or in the paper, or in both. In some cases a definite improvement has been effected by using water from a different source, although this is not a cure-all.

In recent years, alloy rolls have been developed which are more resistant to rust than ordinary chilled iron rolls, but so far no hard roll yet designed for paper calender stacks can be guaranteed to resist pitting completely.

In regrinding pitted rolls, the grinder operator should be instructed to get below the pits, for if this is not done, the rust will continue to eat down in the remaining holes and it will be only a short time before the rolls have to be reground again.—*Booklet No. 114,* FARREL-BIRMINGHAM COMPANY, INC.

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## Some Paper Cutting Techniques

Paper cutting knives are easily harmed by special kinds of stock, unless proper precautions are taken in cutting. Following is a list of some of these stocks, how they affect knives, and the best cutting procedure in such instances:

*Glassine* should never be cut with a sharp knife. It is very likely to cause large nicks in the blade. If large quantities of glassine are to be cut, it is well to have knife especially ground, with a short bevel, for the job.

*Antique* requires a very sharp knife, will dull knife quickly. It should never be cut in high lifts. A leading printing house advises that lifts should be limited to one-half the capacity of the machine. A prominent paper wholesaler advises that soap be rubbed over the blade before each cut. Leading users agree that Antique should be cut only with a freshly ground knife.

*Enameled* paper often is difficult, although a great many cutters say that they do not reduce the size of lift. It may dull a sharp knife very quickly.

*Magazines* with pages of different paper stocks will dull a knife quickly.

*Gummed* papers, according to the aforementioned printing house, draw more than others and often nick the sharp knife they require.

*Pressboard* should be cut only with a knife that has worn down and is becoming dull. It is hard to cut and contains a great deal of foreign matter that often causes large nicks in the knife.

*Newsboard* often contains particles of sand that cause small nicks. It is best to wait until knife is dull before cutting.

*Blotting Paper,* because of its softness, is hard on knives. Most printers recommend only 100 to 125 sheets in a lift at one time, with cardboard sheets at top and bottom to prevent clamp marks.

*Dull Finish Coated* paper should be cut in small lifts because of its tendency to break large pieces out of the knife edge.

Pieces of cardboard on top and bottom of a lift of book paper prevent clamp marks, give a cleaner cut.—*Paper Cutting,* HENRY DISSTON & SONS, INC.

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## Fourdinier Wire Seams

Over a period of many years, new wire problems were encountered in paper mills as machine speeds increased. The need for greater tensile strength and resistance to abrasion was obtained from phosphur bronze wire. Changes in mesh, weave, and construction of wires helped to solve the problems of drainage, formation and finish in paper manufacturing.

Perhaps the most critical problem in wires was the seam. The sewed whipped three and four seam, as illustrated in Plate No. 1, proved satisfactory for a great number of years at slower speeds and with good showers. The speeding up of the Fourdrinier made this type of seam obsolete, because fibers would become imbedded or stapled in the sewing wire and in turn pull stock from the sheet causing a seam mark. This seam was too high and would cut the sheet at the higher speeds, and did not have sufficient strength for the greater loads put upon it.

The first step in seam improvement was to eliminate the whipping wire, and this was done by soldering the first shute wire and then sewing over the second shute wire. This was a great improvement for there was less tendency to clog or mark the sheet. However, still faster machines required more refinements. The next step was the brazing of the first shute wire to give strength where needed. Sewing over the brazed wire resulted in a strong and open seam. An additional improvement, grinding off the ends of the warp wires, resulted in a seam equaling the body in open area, Plate No. 2. This seam is used today where sewed seams are required.

Experience with brazing for sewed seams naturally led to the development of the all brazed seam, Plate No. 3, and the elimination of the sewing wire. EASTWOOD-NEALLEY CORPORATION.

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## Direction of Fibers Affects Strength of Fiber Boxes

The direction in which the fibers run in fiberboard boxes has been found to have considerable effect upon the serviceability of the boxes. Fiberboard does not tear as easily across the grain as with the grain; it may have two or three times as much strength in one direction as in the other, the difference varying with manufacturing conditions. This excess strength may be advantageously used to reinforce the weakest points of the box and so produce a better balanced construction.

The weakest parts of fiber boxes are the scores, or folds forming the edges of the box. It is impossible to have the fibers running perpendicular to every score, but usually they might be made to run perpendicular to the scores which receive the hardest punishment, or which tend to break open first. The location of the scores most liable to failure, of course, varies with the shape of the box and the nature of the

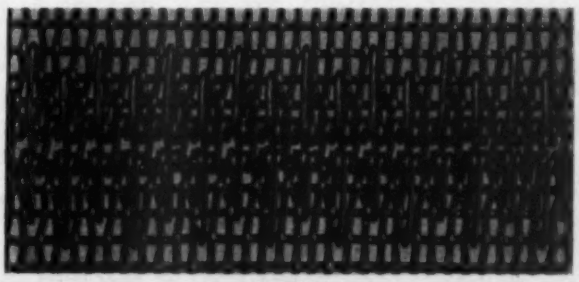

*Plate No. 1*

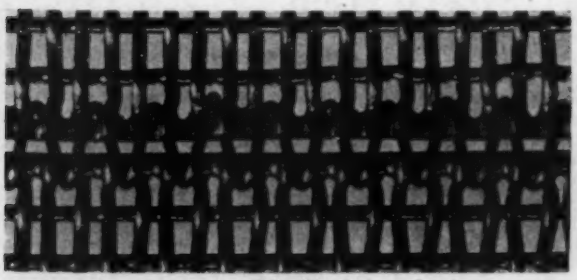

*Plate No. 2*

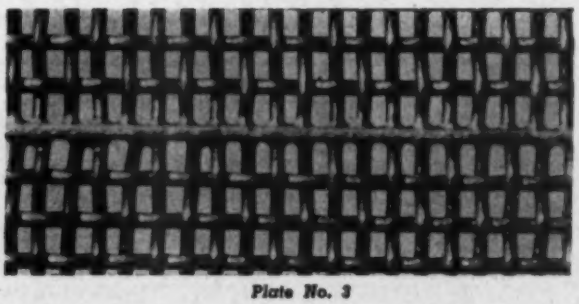

*Plate No. 3*

contents, and can best be determined by test. The following comments and deductions are for boxes whose depth is less than their width.

In tests at the U. S. Forest Products Laboratory, on fiber boxes, some packed with two dozen No. 2 food cans, and some with four dozen tall sized milk cans, it was found that the first break nearly always occurred in the horizontal end scores. By making up the boxes so that the fibers ran vertically instead of horizontally in the sides and ends, the first break throughout the length of a horizontal end score was retarded about 85 per cent. Through the same change, the horizontal side scores, which received the next hardest punishment, were strengthened so that the first break never occurred in them.

The gain in strength of the horizontal scores was, of course, accompanied by a weakening of the vertical scores. But since the upright scores do not ordinarily receive as great stress as the horizontal scores, and in these particular tests were not as likely to come in contact with the sharp edges of the cans, they were able to stand a reduction in strength and yet not become the point of first failure.—*Technical Note No. 150,* FOREST PRODUCTS LABORATORY.

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## How Many Cubic Yards In Conical Pile?

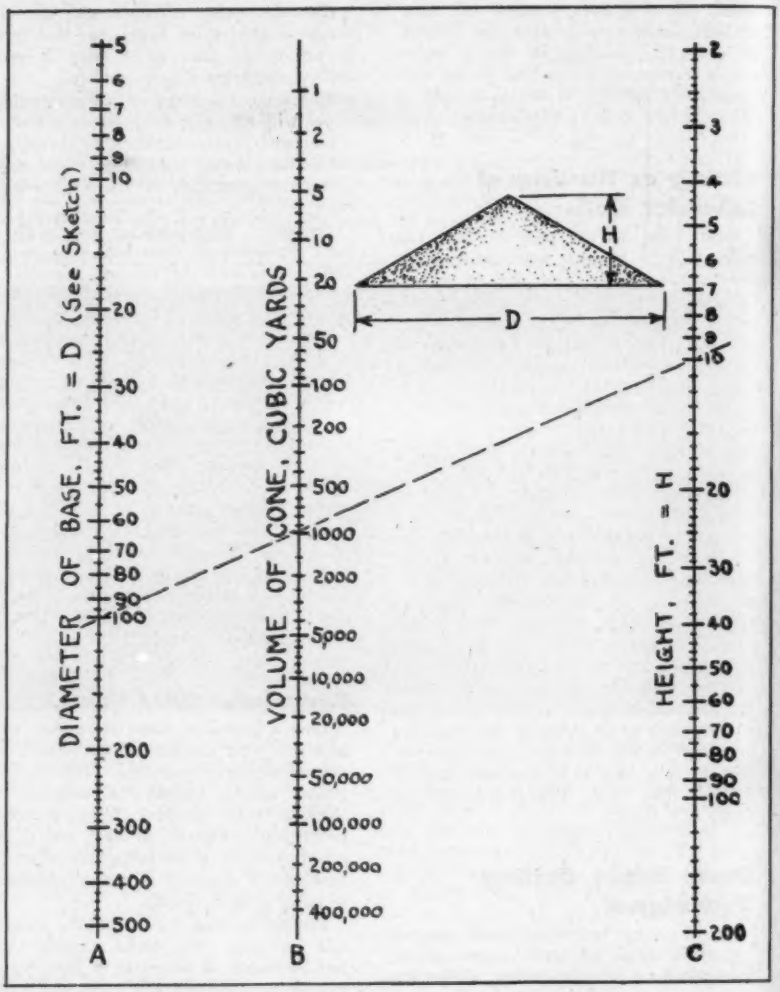
The accompanying chart permits the volume in cubic yards on a conical pile to be determined without performing any mathematical calculation.

Example: How many cubic yards are in a pile that has a base diameter D of 100 feet and a height H of 10 feet (See sketch)?

Calculation Using Chart: Extend line from 100 feet on column A to 10 feet on column C. The point of intersection with column B gives volume in cubic yards; namely, a little less than 1000.

To obtain the number of cubic feet in a pile, simply multiply the number of cubic yards by the figure obtained in column B. Thus, in the present problem, 1000 × 27 or 27,000 cubic feet.

The range of the chart covers base diameters from 5 to 500 feet and heights from 2 to 200 feet.—W. F. SCHAPHORST, M. E.

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## How to Operate Extinguishers

The speed with which an employee uses an extinguisher to attack an incipient fire often makes the difference between an incident and a disaster. Therefore fire protection authorities recommend that periodic fire extinguisher demonstrations be held to teach plant personnel the simple but important rules for operating extinguishers. If demonstrations are too difficult to arrange, this information can be conveyed by means of wall posters, articles in company papers or oral instructions by foremen.

Below are step-by-step directions for operating the different kinds of approved hand extinguishers:

*Soda-acid* and *foam* extinguishers are usually hung on wall hangers or set on brackets or shelves. Take the hose between the thumb and index finger of the right hand and grasp the ring-top handle. Then with the left hand lift the extinguisher off the hook and lower it, keeping the extinguisher in an upright position. Carry the extinguisher to the fire by means of the ring top handle held in the right hand, still maintaining a hold on the hose nozzle.

To set the extinguisher in operation, grasp the bottom handle with the left hand and turn the extinguisher upside down. Release the ring top handle, but continue holding the hose in the right hand to direct the stream.

*Gas cartridge* and *loaded stream* extinguishers closely resemble soda-acid and foam types and are operated in much the same way. When these types are inverted, they must be bumped on the ground to rupture the carbon dioxide cartridge that supplies the pressure to expel the stream.

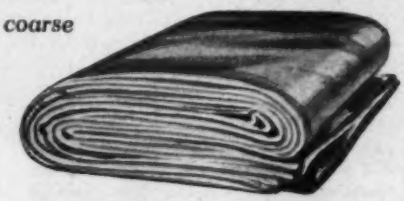
*Vaporizing liquid* extinguishers of the pump-gun type generally are suspended in wall brackets. Remove the extinguisher by grasping the handle in the right hand and pulling outward. Hold the nozzle end in the left hand with the index and middle finger straddling the nozzle tip. On the way to the fire, twist the handle to unlock it and, if the device is of the air pump type, move the index finger over the nozzle tip and pump up pressure. To expel the stream, move the index finger back and pump steadily and vigorously with the right hand.

Larger sizes—1, 2 and 3-gallon capacity—are sometimes provided for special use. They are carried to the fire by the handle at the top and operated by hand pump or by stored pressure. To operate the pump type, rest it on the floor, and pump with the left hand while aiming the hose stream with the right. The stored pressure type is operated by opening the valve provided on the head castings, while the right hand holds the hose nozzle.

*Carbon dioxide* extinguishers are carried to the fire with the left hand, by the handle provided for the purpose. To operate, rest the extinguisher on the ground, pull the locking pin out, take the horn-like nozzle in the right hand, and turn the valve counter-clockwise with the left to release the gas.

*Pump tank* extinguishers are carried to the fire by means of the top handle. The pump is operated by the left hand, while the right hand aims the hose stream.—SAFETY RESEARCH INSTITUTE, INC.

The function of a papermill felt is to remove water and to give to the sheet the formation and uniformity that make it adaptable to the purposes it is designed to serve. ☆ Whether you are manufacturing what is technically known as *fine* papers or what the trade calls *coarse* papers or boards, you will improve their quality and eliminate felt marks by equipping your machines with Hamilton Felts. ☆ Hamilton Felts are woven, fulled and finished with such care and skill that they remove more water and give better formation to the sheets, leaving no watermarks of their own. The closest inspection of a Hamilton Felt will fail to discover the slightest irregularity, even where the ends are joined to make an endless belt of it.



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**Miami Woolen Mills**

# Hamilton Felts

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# Review of the Association of Pulp Consumers, Inc.*

**GEORGE R. WALLACE, President**

▶▶▶ THE MEMBERS OF the Association of Pulp Consumers, Inc., operate 260 paper and paperboard mills which have an annual capacity of 5,000,000 tons of paper and paperboard. They represent approximately 30 per cent of the total paper and paperboard capacity of the United States and use less than 20 per cent of the total wood pulp consumed in the production of paper and paperboard. In addition, they consume large tonnages of waste paper, rags, and other fibrous materials and fillers.

These 260 mills are located in 166 communities in 26 states and the District of Columbia. Over one-half of them are located in communities of less than 15,000 population and approximately one-fourth are in communities of less than 2,500 population. The manufacture of paper and paperboard is the only industry in many of these communities and if the mills were closed, the communities would be destitute.

Even more important, however, is a recent study which shows that more than 95 per cent of the paper and paperboard produced by the mills consuming purchased pulp is used directly in the war effort or for essential civilian needs. Some of the papers and paperboards which go into the direct war effort are used for army ration containers, military balloons, blueprint papers, bomb fins, bomb rings, cable insulation, camouflage paper, condensers, crepe cellulose wadding, dental mouth wadding, filters, gas detection armbands and similar products, gas mask canisters and mask parts, gas protection capes, tarpaulins and similar products, gaskets, gears, grenades and grenade containers, gun and rifle protection sleeves, helmets and helmet accessories, hospital wadding, instrument panels, impervious papers, lens tissue, parachutes and parachute spreaders, shell containers, shotshell and ignition cartridges, surgical bandages, surgical masks and caps, targets and vegetable parchment. In addition to these papers and paperboards used in the direct war effort, the mills also produce paper and paperboard for carbon paper, mimeograph paper, tracing paper, ration paper, waxed and oiled papers, fruit and vegetable wrappers, toilet tissue, towels for industrial use, etc.

In the years immediately preceding the war, the mills depending upon purchased wood pulp secured approximately 35 per cent of their pulp supply from producers in European countries, 15 per cent from producers in Canada, 25 per cent from market pulp mills located in the Pacific Northwest area and the balance of 25 per cent from the surplus pulp production of paper and paperboard mills, located in the Central and Eastern States, which produce both pulp and paper.

The first major dislocation of their wood supply came when the War curtailed and finally stopped the importation of wood pulp from Europe. Imports of wood pulp from Canada were increased substantially, but this did not fully compensate for the shipments previously received from Europe.

A second major dislocation of their wood pulp supply was experienced in October 1942, when the War Production Board issued an order withholding pulp logs from pulp mills in two major Pacific Northwest areas. This order resulted in closing several pulp mills and greatly curtailed the operations of others. The pulp produced in the remaining mills was earmarked principally for nitrating, Lend-lease and other nonpaper uses.

Coincident with the dislocations referred to, there was a marked increase in demand for paper and paperboard products. This increased demand resulted in many of the mills that normally had a surplus of wood pulp which they sold on the open market, using a larger percentage of their own wood pulp production and offering less for sale. As a result, the supply of wood pulp available to the mills consuming purchased wood pulp was further curtailed.

Recent reports indicate that the amount of wood pulp available from Canada during 1944 will be approximately 14 per cent less than the amount received during 1943, and it does not appear that there will be an early resumption of imports of wood pulp from Europe. The mills which produce both pulp and paper and normally sell some wood pulp are having difficulty in securing pulpwood and it is not believed that they will increase their sales of wood pulp in 1944 over the amount they sold in 1943. The only remaining source of supply for the mills depending upon purchased wood pulp is the market pulp mills. These mills are located principally in the Pacific Northwest and are either closed or operating on a curtailed basis. Those that are running are operating an average of about 60 per cent of capacity.

It is estimated that the present wood pulp production in the Pacific Northwest could be increased by 600,000 tons a year, a large portion of which would be available to mills producing paper and paperboard for National defense and essential civilian use. The problem of increasing the pulpwood production in the Pacific Northwest resolves itself into one of Manpower, and is very concisely stated in the preliminary report of the Combined Pulp and Paper Committee of the Combined Production and Resources Board and Combined Raw Materials Board issued on October 8, 1943, and reading, in part, as follows:

"It must be borne in mind that there is no shortage of standing timber and no shortage in pulp and paper manufacturing facilities. In fact, if the mills had more raw material supply they could, with little or no additional manpower, produce more products. Assurance has been given this Committee by Timber Controller of Canada that woods equipment and facilities are adequately available in Canada, and by officials of WPB that they can, if necessary, be augmented in the United States. Therefore, the shortage exists in cut pulpwood because of insufficient labor supplies, both at present, and increasingly so in prospect."

To increase the production of wood pulp in the Pacific Northwest requires additional men in the woods to cut pulpwood. The cutting of pulpwood in the Pacific Northwest is ordinarily combined with obtaining saw logs for lumber since it is not considered practical to log a stand of timber for pulpwood alone. It is estimated that in the average logging operation, approximately one-half of the time of the men is consumed in cutting logs for pulpwood and one-half in cutting logs for lumber.

Many of the men who normally were employed in timber and pulpwood operations are now engaged in other occupations and it is the purpose of this proposed legislation to make it possible for them to return to their former employment in the woods and to retain those who are now employed. Without such legislation, the situation will further deteriorate, thereby forcing the closing of many paper and paperboard mills which are engaged in producing items needed in the direct war effort and for essential civilian needs. It is generally recognized that if a paper or paperboard mill is closed at this time, it will be most difficult—if not impossible to reopen it during the remainder of the

(*) Statement made by Mr. Wallace in support of H. R. 4090.)


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INTERNATIONAL WIRE WORKS

MENASHA, WISCONSIN

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There is a complete line of Ingersoll-Rand steam condensers and steam-jet ejectors for prime mover application and for other vacuum services in the paper mill. Ask the Ingersoll-Rand service engineer for further details. Ingersoll-Rand Company, 11 Broadway, New York 4, N. Y.

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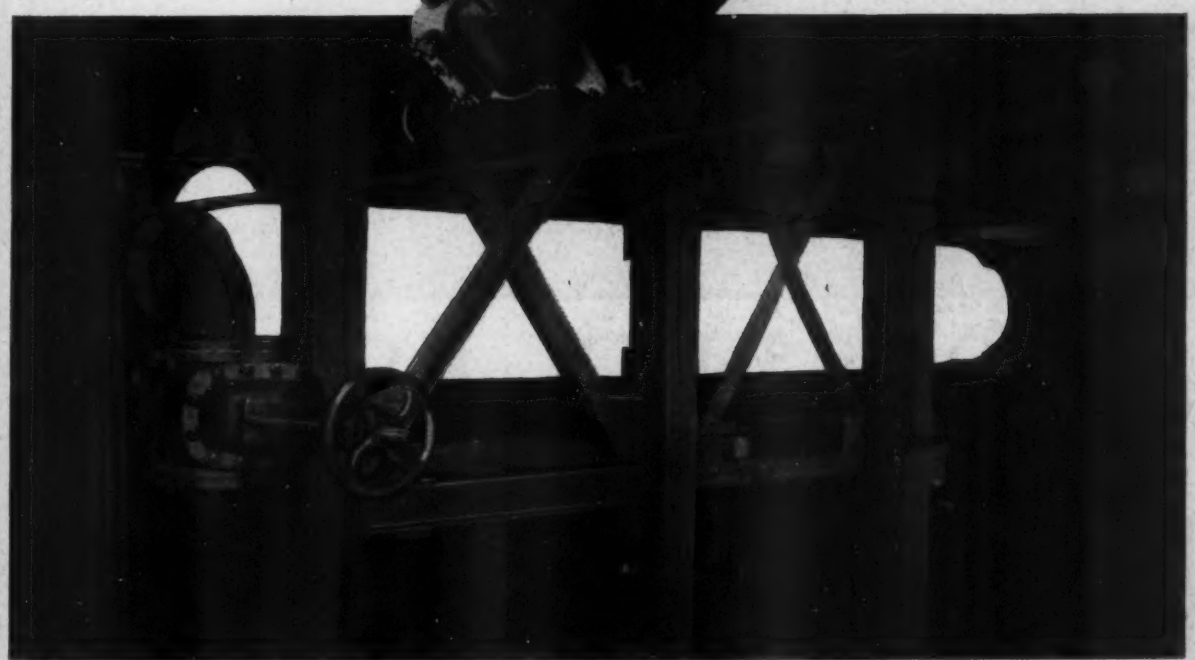


War period. Unless steps are taken to increase the pulpwood production so that there will be more wood pulp available, we will soon face a situation where there will not be sufficient wood pulp to produce the items needed by the armed forces and for essential civilian needs, and the war effort will be greatly handicapped.

These 260 paper and paperboard mills, depending on the purchase of this ever-diminishing supply of wood pulp, are exerting every effort to meet the critical wood pulp shortage by an increased use of secondary fiber such as waste paper, rags and other fibrous materials. They are now using from two to five times the normal amount. The result is that it does not permit them to make all the types of paper and paperboard the Army and Navy and essential civilian needs require, for which they are particularly well equipped, and it also forces them to make grades of paper which places them in an unfavorable competitive position with paper companies that own their own pulp mills.

By the use of waste material, these paper and paperboard mills have stretched the reduced available supply of wood pulp to the very limit, and many of them now have been forced to reduce their operations to 4 or 5 days a week. To further attempt to meet this critical situation, the companies using purchased pulp have contributed $50,000 to the War Activities Committee of the Pulp Wood Consuming Industries, to assist a campaign to inspire farmers to increase their production of pulpwood. However, without this legislation, the farmer may lose his deferred status by cutting pulpwood during the periods when his farm work permits, and he is reluctant to take that chance.

Four thousand additional men in the woods in the Pacific Northwest will produce sufficient additional pulpwood to reopen the pulp mills which are closed and to increase the production of those which are now operating. In addition, these men will produce a large quantity of saw logs which are also urgently needed. We are asking your help in making these men available so that we can produce the paper and paperboard needed in the war effort and prevent a breakdown in the future supply of paper and paperboard.

# Import Committee's Twentieth Anniversary

**WARREN B. BULLOCK**

▶▶▶ THIS YEAR marks the 20th birthday anniversary of the Import Committee of the American Paper Industry.

It was at the Annual Convention of the American Paper and Pulp Association in 1924 that the first steps toward the formation of the Import Committee were taken, under the inspiration of the Salesmen's Association of the Paper Industry. Active work began at once, and before the end of the year the Committee was functioning successfully as a separate organization of the paper industry, with its sole purpose the prevention of unfair foreign competition.

While the Committee was formed to secure the enforcement of existing tariff laws by cooperation with Government officials, the information and experience gained in its operations formed the essential basis upon which the industry could proceed through appropriate committees to secure legislative changes when necessary. It was because of this experience that the industry was able to present its case to Congress in 1930 in such a way that many changes were effected in the Tariff Act.

During the twenty years of its existence the Import Committee has recorded 10,691 separate cases, in which it represented the domestic industry either before Custom officials or in the United States Customs Courts. The Committee has never varied from its original policy of providing "Facts and Facts Only" to appraising officers of the Bureau of Customs, to the Department of Justice for trial of cases in the United States Customs Courts, to the Treasury Department and the United States Tariff Commission. It is a matter of pride to us that the Committee is recognized by all these agencies as adhering strictly to the policy of providing facts as called for, even when those facts are to the advantage of opposing interests.

Its intensive study of all problems, unflagging vigilance and close contacts with Government officials in all parts of the country has enabled the Committee to render effective service to the industry.

The establishment of a definition of standard newsprint is probably the outstanding accomplishment of the Import Committee. This definition stopped the duty free importation of many papers which had been coming into this country improperly classified. The effect on the groundwood and book paper markets is difficult to compute, but it is known that imports of rotogravure paper from Germany alone, valued at $1,000,000 per year, were stopped and the business diverted to domestic mills when this paper—formerly allowed to come into this country duty free as standard newsprint—was classified for duty. A large tonnage of other book and groundwood papers was similarly diverted to American mills. Imports of dutiable printing paper in 1923 were over 8,000 tons, but only 1,300 tons five years later.

In the writing paper field the classification of many foreign grades as decorated paper at a higher rate than that for plain writing paper figured in over 2,000 cases in the United States Customs Court.

Statistically, the activities for the wrapping paper manufacturers were not spectacularly successful. By developing a cartel control of prices by which they could comply with technicalities of the Tariff Act, Scandinavian manufacturers were able to win many cases in which Customs officials had ruled that there was undervaluation of paper to the extent of over 1 cent per pound. The importers eventually won a test case in the Courts, but the handicap to their business was so great that imports, which amounted to 43,000 tons in 1923, valued at nearly $4,000,000, dropped to 8,000 tons, valued at $600,000, in 1928. Despite favorable trade agreements reducing the rate of duty, imports have never since reached half the former value.

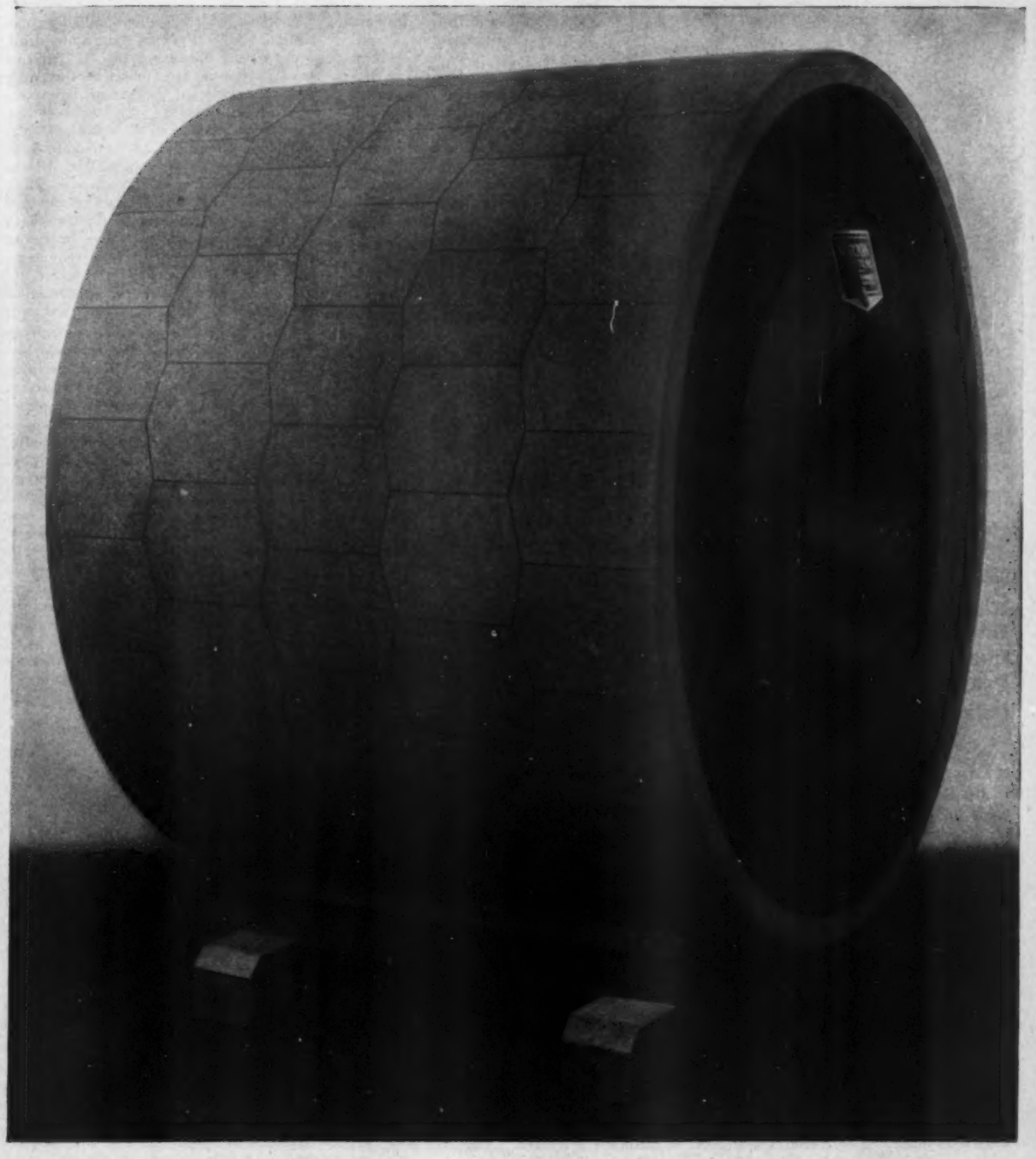
Comparable results were attained in the tissue, paperboard and other fields, and nearly 2,000 cases involved specialties such as fancy box covers, Christmas wrapping, metal decorated and similar papers.

Inasmuch as this report is a twenty-year survey of the Import Committee's operations, it may not be amiss to tabulate the service rendered to various groups. There are two kinds of cases which can be recorded statistically, general and court cases. General cases are those in which broad problems are involved, such as the cases which resulted in the formulation of a definition of standard newsprint. Classification cases are those in which foreign paper has been claimed dutiable at lower rates than those which the Import Committee and Customs officials believed should be levied. Undervaluation cases are those in which Customs officials have held that imported paper dutiable at ad valorem rates has been entered for duty at values lower than those on which the duty should be computed.

Statistically, the work of the Import Committee's twenty years of service to the paper industry is shown in the accompanying tabulation.

The position of the Import Committee has been sustained by the authorities in 79 per cent of all the cases concluded. In addition to the 9,911 cases decided there are still 780 cases awaiting disposition. Nearly 400 of these cases involve the dutiability of Japanese tissue paper imported

| | General Cases | | Classification | | Valuation | | Total | |
|---|---|---|---|---|---|---|---|---|
| Grade | Won | Lost | Won | Lost | Won | Lost | Won | Lost |
| Board | 255 | 17 | 369 | 87 | 110 | 36 | 734 | 140 |
| Newsprint | 296 | 50 | 164 | 17 | 20 | 6 | 480 | 73 |
| Printing | 184 | 16 | 335 | 66 | 171 | 38 | 690 | 120 |
| Tissue | 104 | 8 | 413 | 319 | 556 | 132 | 1073 | 459 |
| Wrapping | 245 | 36 | 261 | 170 | 226 | 463 | 732 | 669 |
| Writing | 99 | 13 | 1887 | 267 | 36 | 46 | 2022 | 326 |
| Specialties | 293 | 4 | 1184 | 215 | 269 | 43 | 1946 | 262 |
| Miscellaneous | 65 | 5 | 279 | 23 | 10 | 3 | 354 | 31 |
| TOTALS | 1541 | 149 | 4892 | 1164 | 1398 | 767 | 7831 | 2080 |



# NORTON PULPSTONE

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in the American program for Victory

NORTON COMPANY
WORCESTER, MASS.

principally for use as coffee filters. This paper has been classified as tissue paper, not at the lower rate for filtering paper. The importers of this merchandise are still contesting this classification, even though their shipments arrived before war was declared.

It is important that in all cases which have come before the United States Customs Courts the importers, in order to protest against the rate levied, must first have paid the duty computed by the officials. In the cases where the position of the importer has been sustained, the importer receives a refund of the excess amount paid, but it can be safely assumed that the original added cost had already been carried on to the consumer. The imposition of higher duties on imported paper has not only served to penalize the importer who brought in the merchandise, but a far more important result has been to discourage the buyers of foreign paper from making further purchases abroad.

Despite the war, many new problems have come before the Import Committee in recent months. Most of these cases have arisen from the development in Canada of new types of paper to serve as substitutes for old well-recognized grades. Also because of the war, Canadian manufacturers have been shipping considerable quantities of paper of higher grades than those formerly made for the American market. In all the cases involving new type products, the Import Committee has been meticulous in seeking a classification which would permit the best utilization of the paper industry's resources for the prosecution of the war, without permitting the establishment of precedents which might be damaging in peace times.

The results attained during the Import Committee's twenty years of service have justified the decision of the industry to keep the Committee in existence as a functioning organization in anticipation of the post-war period when foreign papermaking nations will make the most strenuous efforts to recover their American markets.

# Convention Papers . . . Abridged

## Recent Work at The Institute of Paper Chemistry on Dielectric Properties of Paper

**J. A. VAN DEN AKKER, Research Associate**
**The Institute of Paper Chemistry**

No attempt will be made here to review the rather extensive literature on dielectric studies and phenomena. A good review of the subject, including adequate coverage of the literature, has been published by H. H. Race; R. J. Hemphill; and H. S. Endicott (P. I. and P. W., 22:792-798, 800, 1940).

The electrical industry has carried out most of the research and development work which, in co-operation with pulp and paper mills, has been responsible for the improvements effected in the electrical properties of condenser tissue and cable paper. In initiating the theses (Delevanti, Cyril N., Jr., "The development of apparatus and techniques for the study of the dielectric constant and loss angle of paper." Doctor's Dissertation, 1943. 89 p.; Hansen, Paul B., "A study of the power factor and specific inductive capacity of a paper dielectric as influenced by certain constituents of the paper." *Ibid,* 1943. 80 p.; Adams, Daniel O., "A study of certain factors influencing the dielectric strength of paper." *Ibid,* 1943. 84 p., Appleton, Wis., The Institute of Paper Chemistry), which are briefly discussed in this article, it was believed that significant contributions could be made by men trained in the fundamentals of both electricity and the pulp and paper industry.

Up to the present time the dielectric properties have been the subject of three doctoral investigations at The Institute of Paper Chemistry. Two of these, of which the first was initiated in 1941, were concerned with the dielectric constant and power factor of paper. The third was a study of some of the factors influencing the dielectric strength of paper.

The first two investigations have been chiefly concerned with dielectric loss in paper, since power factor is directly related to loss of energy and to heating in an alternating current capacitor, and is generally considered a good measure of the electrical quality of a dielectric material.

The apparatus for the measurement of dielectric constant and power factor consists of a thoroughly shielded conjugate Schering bridge (A.S.T.M. Tentative Method D150-42T. *1942 Book of A.S.T.M. Standards,* Part III:1148-1178), a source of alternating current of frequency variable from commercial frequencies to about 10,000 cycles per second (the a-c. source is the newly developed "transitron" oscillator) (Delaup, P. S., *Electronics* 14, no. 1:34-36, Jan. 1941; Jordan, S. R., *Electronics* 15, no. 7:42-43, July, 1942), a three-stage amplifier for accurate detection of the null-balance point, and a test condenser and chamber.

In commercial operations utilizing paper dielectric, the paper is thoroughly dried, because very small amounts of moisture have a relatively large effect on the power factor. Because of the strong dependence of electrical properties on moisture content, fundamental studies of dielectric properties should be carried out on thoroughly desiccated paper. To accomplish this, the test condenser is arranged in a chamber which may be evacuated to a pressure of the order of one or two millionths of atmospheric pressure. The condenser may be heated to desiccate the specimen more completely, and to make it possible to observe the dependence of the dielectric properties on temperature.

There are two rather interesting features of the test condenser. The electrode having a guard ring is the lower electrode, and this is rigidly mounted on insulating posts. The upper electrode may be moved up or down during evacuation by means of a sylphon bellows, which is controlled through simple manipulation of stopcocks. The upper electrode is maintained in the raised position during evacuation, so that moisture leaving the specimen may have free access to the chamber, and thence to the pump. When a measurement is to be made, the electrode is lowered onto the specimen. The separation between the electrodes is accurately measured with the help of a spirit level vial, one end of which rests upon a post, while the other end rests upon the center of the top surface of the upper electrode. The whole chamber system may be rotated about a horizontal axis lying directly below the post. This rotation is effected by a calibrated screw, which is adjusted to bring the bubble in the spirit level vial to a predetermined point. After the specimen has been removed, three very small spaces are placed between the electrodes, and the separation is obtained by measuring the capacitance of the air condenser thus formed. A simple calculation involving this separation and the change in reading of the calibrated screw gives the separation which obtained when the specimen was in place. The sensitivity of this method is estimated to be of the order of 0.00004 inch.

After working out various techniques, not the least of which was the making of suitably uniform test sheets, a number of interesting observations were made. A few of these will be briefly mentioned here.

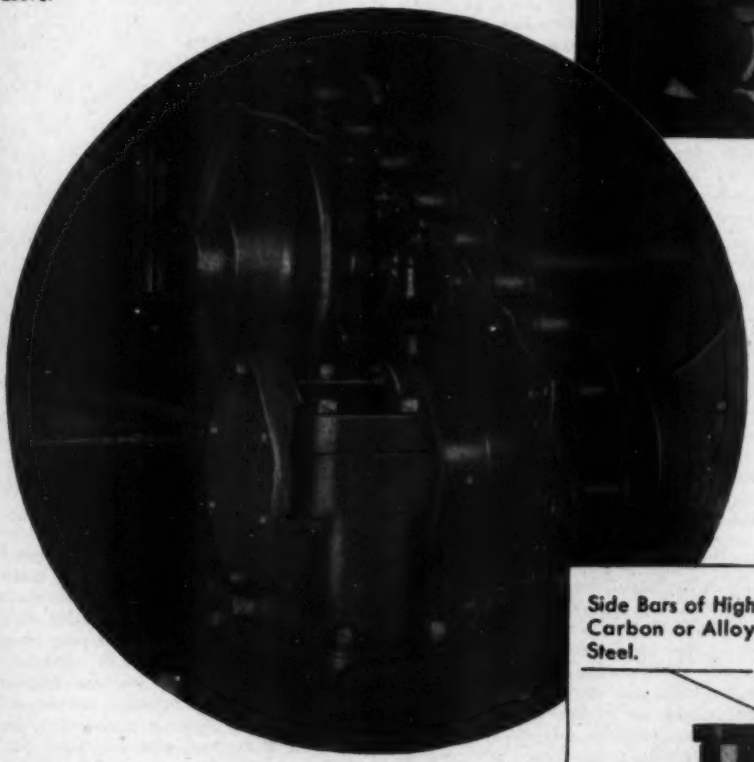
Special flushing experiments with purified, carefully dried nitrogen showed that flushing caused only an inappreciably faster approach to equilibrium than that observed with no flushing, the finally observed power factors being the same. Very minute leaks in the vacuum systems produced a flushing of effectiveness about the same as that provided by the special flushing system. (The limiting power factor of a commercial, specially washed kraft pulp used in the manufacture of electrical papers was—after correction for difference between electrode spacing and average thickness—of the order of 0.0018.)

Incidentally, corrections of the observed dielectric constant and power factor require knowledge of the relationship between sheet density and dielectric constant. In this work, as in previous researches at the Insti-

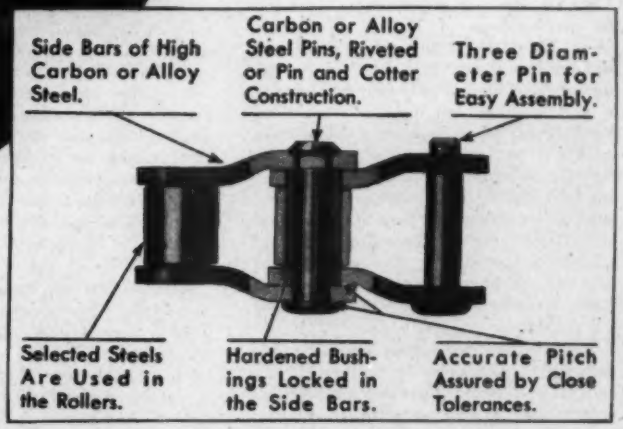
This is the first installment of abridgments of papers presented at the annual meeting of the **Technical Association of the Pulp and Paper Industry,** held in New York City, February 14-17, 1944. Monthly installments of these abridgments will appear in succeeding issues.

# WE CALL THAT OUR PLEASURE DRIVE

**❶ "I STILL HAVE THE JITTERS** when I think of that old drive we had," this mill operator told me. "Always breaking down right in the middle of a big rush job . . . never really operating right, it was the headache of the whole mill. We never got real production till we decided to put in that Chabelco chain belt drive."



**❷ "DID IT EVER FILL THE BILL!** Why, that chain belt runs so smoothly the boys call it the 'pleasure drive.' And it not only operates better, but it has lasted far longer. Let me tell you, with the conditions under which it operates . . . dusty, dirty, never getting the right attention or lubrication . . . it's a miracle it runs at all. How come that Chabelco chain drive is so good?"


Side Bars of High Carbon or Alloy Steel.
Carbon or Alloy Steel Pins, Riveted or Pin and Cotter Construction.
Three Diameter Pin for Easy Assembly.
Selected Steels Are Used in the Rollers.
Hardened Bushings Locked in the Side Bars.
Accurate Pitch Assured by Close Tolerances.

**❸ "LOOK AT THIS DIAGRAM,"** I told him. "Look at that three-diameter pin with its milled ends that prevent it from turning in the side bars. Note the offset side bar construction, the high finished, case hardened bushings locked in the side bars and the other quality Rex features. It's built tough for tough service. That Rex design means far longer life and greater service."

* * *

*Rex Chabelco chain belts are the answer to any drive problem where strength and long life are needed. The Rex man can help you with your chain belt application problems. And for engineering data on Rex chain belts, ask for the 768-page catalog No. 444. Chain Belt Company, 1717 W. Bruce Street, Milwaukee 4, Wisconsin.*

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tute on wall boards of a given kind (Unpublished work); it was found that the Clausius-Mosotti function was followed by paper. This function is a rather simple one stating that $(K\text{-}1)/(K\text{-}2)$ is proportional to the density, where $K$ is the true dielectric constant of the sheet.

A hysteresis was observed in the relationship between power factor and temperature. On varying the temperature through complete cycles in the approximate range from 25 to 70 C., it was observed that the power factor rose when the temperature was reduced, and fell when the temperature was increased, the curve for ascending temperature lying appreciably above the curve for descending temperature. It was assumed that this was due to the presence of water vapor at a partial pressure as low as $10^{-5}$ mm. of mercury. This was borne out by special experiments designed to vary the amount of the residual moisture in the chamber. It appears that the very small power factor observed under drastic conditions of desiccation may be due in large measure to the very energetically bound last traces of moisture adsorbed by the cellulose and other constituents of the pulp.

Experimental kraft pulps varying widely in degree of digestion were used in studies of the effects of washing and lignin content. The washing of the pulp following blowing of the experimental digesters was that normally employed in the preparation of pulp for ordinary purposes. Subsequently, special washing techniques were used, and in all cases the test sheets were prepared with distilled water under conditions designed to eliminate contamination. For the latter purpose, a special glass sheet mold was constructed, and beating of the pulp was done in a Lampén mill.

Special washing experiments based on the investigations of McLean (*Ind. Eng. Chem.* 32:209-213, 1940) were carried out. McLean has shown that most of the inorganic material in a pulp may be removed by acid washing, and that the removal of metallic ions is an exchange phenomenon in which the hydrogen ion replaces the cation. Subsequently, the hydrogen ion can be replaced by the cation of a given salt by immersing the pulp in a solution of that salt, thereby controlling the kind of adsorbed cation; or the acid-extracted pulp may be thoroughly washed in distilled water, resulting in a pulp having very low ash content.

A series of experiments involving this exchange phenomenon were carried out, and it was found that the metallic ion content had a very appreciable influence on the loss factor of the pulp, particularly at high frequencies.

In studying test sheets made from pulps differing in lignin content over a range from essentially zero lignin content (bleached kraft pulp) to about 6.8 per cent lignin, it was observed that the presence of lignin is associated with an increase of the loss factor, the effect being greatest at high frequencies. It should be pointed out in passing that pulps bleached with chlorine are not employed for electrical purposes because of the harmful effects of even small concentrations of the chlorine ion.

The investigation of dielectric strength was carried out to explore the factors influencing the breakdown potential gradient in unimpregnated paper. For some time certain manufacturers of cable paper and other papers used for high voltage insulation have attempted to control the dielectric strength of their product by measuring the sparking or breakdown potential of the paper as it comes from the paper machine.

In the thesis work on this problem, it was considered desirable to measure the electrical breakdown gradient of test sheets after evacuation and desiccation in atmospheres of dry nitrogen at various pressures and temperatures. To this end a heavy-walled steel chamber was constructed. This test chamber was so designed that ten specimens could be conditioned and tested at a time. It was sufficiently rugged and well sealed to permit evacuation to a few micros pressure and subsequent entry of dry nitrogen to a pressure of at least 200 psi, at temperatures up to about 60 C. Ten lead-ins insulated for high voltage and connected to the individual electrodes enable separate testing of the individual specimens.

In view of the porous nature of cable paper and similar insulating papers, it was expected that the dielectric strength of the gas in the pores between the fibers would be an important factor in the over-all dielectric strength of the paper sheet. As is well known, there is a definite and known relationship between the dielectric strength of a gas and the pressure of the gas. In consequence, the most characteristic relationship observed was a steeply ascending curve relating dielectric strength of the paper (test sheets prepared from laboratory unbleached kraft pulp) and pressure of the nitrogen gas.

We cannot consider here the many interesting technical relationships and observations made in the thesis work. It is of interest to point out that some of these relationships are somewhat surprising; for example, when maintaining sheet thickness, gas pressure and other variables at constant values, an increase in sheet density caused an appreciable decrease in dielectric strength (in the density range, 0.56 to 0.83 g./cc.). This and all other effects are accounted for by a theory developed in the thesis.

The basis of the theory is that the cellulosic fibers have an electric barrier action.

In a special experiment in which the sheet was conditioned in an atmosphere of nitrogen at 50 per cent relative humidity, it was found that the barrier action of fiber having appreciable moisture content was significantly but not greatly less than that of the dry fiber. In the first two thesis investigations summarized in this review, it was shown that the loss factor of dry unbleached fiber is an increasing function of salt content. It may then be expected that the dielectric strength will depend upon the ash content of the pulp. However, any such effect may not be significant from a practical standpoint in view of the low ash content of insulating papers. Although changes in ash content produce significant changes in loss factor, it must be remembered that loss factor is an especially sensitive property. The loss factor and conductivity are enormously greater in paper conditioned at 50 per cent relative humidity than in thoroughly desiccated paper; yet, according to the present work, the dielectric strength of paper conditioned at 50 per cent was of the order of 15 per cent less than similar paper after thorough desiccation.

## Luminescent Pigments

G. F. A. STUTZ[1]

It is the purpose of this paper to review some of the presently used photoluminescent materials and their properties, considering particularly those pigments of interest to the paper industry.

The discussion is limited to those materials which employ the long ultraviolet, or so-called "black light" region of the spectrum for their activation. This is the range just short of the visible, from 3200 to 4000 Angstrom units.

Fluorescent pigments for use with exciting light in the long ultraviolet range may be divided into two groups; those which are organic in chemical composition and those which are inorganic.

Many organic materials display the phenomenon of fluorescence. Vegetable oils, mineral oils and many natural fibers have strong fluorescence. Practically all synthetic organic colors are more or less fluorescent and certain of the synthetic dyes are strongly fluorescent under long ultraviolet excitation. The organic fluorescent materials in use today are synthetic dyes, dye intermediates and metallic salts of dye intermediates. The dyes include such materials as rhodamine, eosine, and flavine. Their fluorescence is a characteristic of their molecular structure, and they, therefore, fluoresce most brilliantly when dissolved in suitable media or when applied to fibers. The dyes generally lend themselves readily to the preparation of fluorescent printing inks, lacquers, paper coatings, dyed plastics, dyed wood pulp fibers and other dyed fibrous materials. From the standpoint of printing ink manufacture, quite satisfactory smoothness can be obtained since the dyes are dissolved in the vehicle. Such dyes, however, have relatively poor fastness to sunlight and daylight, and this constitutes their principal weakness. In the form of printing inks, coated papers, lacquers and the like, extreme care must be taken that the fluorescent dyes are not given undue exposure to sunlight or they will lose their fluorescent property and will also lose much of their daylight color. They have the desirable property that, in general, their daylight color and their fluorescent color are quite similar. The fluorescent colors obtainable cover the range of the entire visible spectrum and are characterized by their saturation and brilliance.

Somewhat more stable pigments may be prepared by precipitating the dyes on suitable inorganic base materials, such as aluminum hydrate, to form lakes.

A number of intermediates and other organic materials show fairly strong fluorescence and in many cases the fluorescence of these materials can be further in-

(1) Development Engineering Division, Technical Department, The New Jersey Zinc Company (of Pa.), Palmerton, Pa.

creased by preparing metallic salts from them. An outstanding example of such a material is the zinc salt of 8-hydroxyquinolin which is white in daylight color and exhibits brilliant green fluorescence. Such metallo-organic salts as this one are considerably more stable on exposure to sunlight than are the organic dyes. Again they lend themselves readily to the preparation of quite satisfactory printing inks and coated papers.

The inorganic types of fluorescent materials are also widely distributed in nature and are usually know in the form of ores such as fluorite, sphalerite, willemite, and scheelite. In many cases the fluorescent property is used as a means of discovering, identifying, or separating such minerals. The commercially useful fluorescent pigments, however, are rather limited in number and they are generally sulphides of zinc or combinations of zinc and cadmium. Such pigments must be produced under conditions insuring the greatest possible purity, using very small and controlled amounts of activating heavy metals such as copper, manganese and silver. The pigments are prepared by calcination at relatively high temperatures and as a result their particle size is somewhat coarse as compared with ordinary pigments. The average particle size of the zinc and cadmium sulphide fluorescent pigments is about 1 micron which is three or four times as coarse as most ordinary paper and printing ink pigments. The daylight color of these materials varies from white to yellow, while the fluorescent color ranges from blue to dark red. In general, the orange and red pigments are highest in cadmium sulphide content.

Phosphorescent pigments may be subdivided into two groups, those having a short afterglow (up to 2 hours) and those having a long afterglow (6 to 24 hours or more).

The short afterglow phosphorescent pigments are zinc sulphides and combinations of zinc and cadmium sulphide. They are prepared in much the same way as the fluorescent inorganic pigments except that they are calcined at higher temperatures. They are therefore quite coarse (5 to 20 microns) and are not easily fabricated into filled paper, paper coatings or printing inks. They are quite stable, similar to the fluorescent inorganic pigments, but because the afterglow is comparatively short, they find only limited application and usefulness.

The long afterglow phosphorescent pigments are calcium and strontium sulphides and combinations of these. Again they must be prepared from pure chemicals, suitably activated with small amounts of metallic salts treated with fluxes and calcined at high temperatures (1000 to 1200 C.). These pigments are very coarse and cannot be finely ground or thoroughly dispersed without loss of phosphorescence. In addition, they are quite unstable because of their ready decomposition by water. Traces of atmospheric moisture are sufficient to hydrolyze them with a complete loss of phosphorescence. The coarseness and lack of stability of these pigments has thus far prevented any large use in paper, paper coatings, or printing ink. For satisfactory results, such pigments are fabri-


# 20 Years' Service for Log-Haul Chain—*And Then Some*

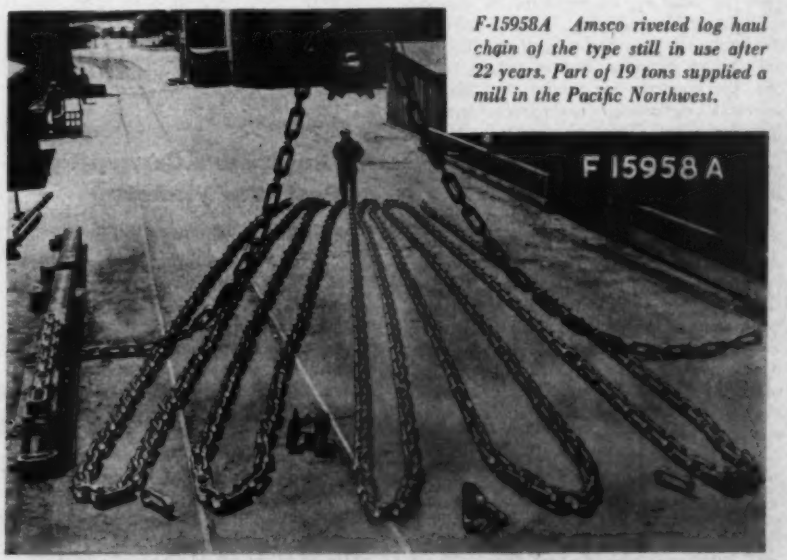
A year ago an Amsco man checked up the performance of several installations of our riveted coil type manganese steel log-haul chain in California saw mills.

He found, at the mill where this chain was first used, that the original 6″ chain, installed 22 years ago, was operating 15 hours a day and seemed good for another 20 years. Our heaviest chain —2″ x 3″ x 10″ link—put to work over 18 years ago in this same mill was still hauling logs 10 hours a day and apparently had not used up more than half of its "life expectancy." A good many installations of the same type chain were scattered throughout the mill and the debarking plant, and none showed much evidence of wearing out.

At another mill a long Amsco log haul chain had been installed in 1929, and in October, 1942 no one was willing to predict when replacement would be necessary —possibly another 13 years to go. There had been a few repairs, but on the whole it had been very satisfactory.

Amsco chains—log haul, conveyor and barking drum—have established many a record for long life in saw mills and pulp mills. Their durability in severe service has been of especial value during these war years, when replacements have been hard to get.

Wherever shock and abrasion are encountered in logging, saw mill and pulp mill operations, austenitic manganese steel castings are prescribed for resistance to breakage and wear. Write for new Bulletin 144-L on the uses of manganese steel in the lumber and paper industries.




*F-15958A Amsco riveted log haul chain of the type still in use after 22 years. Part of 19 tons supplied a mill in the Pacific Northwest.*

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cated in plastics or paints. Some printing applications have been made by resorting to silk screen printing, bronzing (dusting) printing and by reverse printing (black overprinting) on paint coated surfaces.

Fluorescent zinc sulphides and zinc and cadmium sulphides are the luminescent pigments that have found most use in printing inks, coated papers, and filled papers.

The fluorescent property of these pigments is a function of their crystal structure and since they are relatively coarse, some care must be exercised in grinding or dispersing them so as not to destroy their crystal structure.

While satisfactory printing inks have been prepared from these fluorescent pigments for use in compression printing in many fabrications, it has been found desirable to resort to other printing processes. In the case of instrument dials and other pieces of equipment where markings and gradations are required, the silk screen printing method has been used with considerable success. In the printing of tables of data where a black background is desirable, the bronze or dusting method of printing has been quite satisfactory. Again, in the printing of dials and similar items requiring fine gradations and divisions, as well as in the printing of tables of data, the method of overprinting has been used quite successfully. By this latter process, rather coarse pigments may be used by incorporating them in a paint-like coating which is applied to the paper, metal, paperboard, or other material to be printed and the overprinting is then done by conventional means using a black opaque printing ink.

Chemically, these pigments are quite stable, being unaffected by water, weak acids or alkalies, or exposure to strong sunlight and weathering. Under certain conditions of exposure to sunlight, in the presence of moisture, and in certain vehicles, the pigments are subject to a photochemical darkening, sometimes termed light-darkening. Precautions must be taken to select suitable vehicles or other dispersing mediums so as to avoid such photochemical darkening.

The selection of a vehicle is important, not only from the standpoint of light-darkening, but also to obtain best fluorescent brightness and color. In general, the vehicle should be colorless and reasonably transparent to the exciting ultraviolet light. In this respect, solutions of some of the newer synthetic resins are superior to the older types of bodied oils. Methacrylate, polystyrene, vinyl chloride and vinyl acetate are most satisfactory to give films of high fluorescent brightness. Other resins, such as urea-formaldehyde, or alkyd, or processed oils, may be used, though generally at some loss in luminescence. The combination of care in selection of a suitable vehicle and proper incorporation or dispersion of the pigment in the vehicle makes the successful preparation of fluorescent printing inks a matter for some test, trial, and development.

The fluorescent color is a direct function of the pigment. A wide range of colors is available from a light blue (zinc sulphide) to a deep red (zinc and cadmium sulphide). The color is controlled by the ratio of zinc sulphide and cadmium sulphide used in the base pigment, by the amount and kind of activating metal used, and by the temperature of calcination. The spectra of these pigments are generally continuous bands of radiation and such bands are often narrow and the resulting color is quite saturated.

Daylight color is generally white or near white and does not at all correspond to the fluorescent color. Pigments containing large amounts of cadmium show some of the characteristic yellow color of cadmium sulphide.

The fluorescent brightness is partly a function of the dispersing medium and the degree of dispersion, but is principally a function of the pigment. In general, the green and yellow pigments show highest fluorescent brightness, comparable to the most brilliant of the organic dyes. The fluorescent brightness is controlled by the intensity of the exciting light used and the concentration of fluorescent pigment in the composition. By such control, brightness from 1 microlambert* or less to several thousand microlamberts or more, may be obtained. Since fluorescent compositions are most often used under conditions where the dark adapted eye is being employed and its dark adaptation must be maintained, the brightness levels used range from 1 to 40 microlamberts.

Fluorescent inorganic pigments are not completely instantaneous in their response to excitation or in their cut-off when excitation ceases. In the practical application of the pigments, the lag in response to excitation is not a serious limitation, but in some cases the afterglow or lag is objectionable. One specification requires the material to decay to 5 per cent of its fluorescent brightness 0.5 second after excitation ceases. The maintenance of this property is again the function of the pigment and is controlled by the activating metals, calcination procedures, etc., used in its manufacture.

## An Engineer's Conception of Post War Planning

**MILTON JACOBS, Paper Mill Engineer**
**C. T. Main, Inc.**

Because of the tremendous scope of the subject of "Post War Planning" it will be necessary to confine this paper to the pulp and paper industry and more specifically to pulp and paper as a basic industry. The expanded uses to which paper may be put as a material for new and improved products will not be discussed but rather the actual production of pulp and paper as such. Only the engineer's viewpoint will be considered which must, of course, be combined with a management's over-all viewpoint to produce results within the structure of a sound economic policy.

Stripped of all social and humanitarian aspects, "Post War Planning" represents an accumulation of planning which has been deferred because of war conditions and a preceding period of depressed business conditions. Restrictions the past few years have prevented ordinary replacements and improvements. With an accumulation of these deferred replacements and improvements, the necessity of planning has been energized and brought into focus. The manufacturers have also become aware of the amount of material previously put back into the plants from year to year and the more effective results which could have been obtained had these expenditures been made with a preconceived plan covering the overall production requirements. The problem of improvement and expansion must now be faced squarely. Management must decide if it is to be satisfied with merely fixing it before it shuts the plants down or whether it shall actually improve operation conditions through planned repairs, replacements and capital expenditures.

Because of an accumulation of deferred work, the phrase "Post War Planning" should not be allowed to become a hysteria. Pressure is being brought to bear by federal, state and local organizations as well as others who would like to obtain orders to be filled in the future as a hedge against a declining rate of production. The sincerity of the groups pressing industry to make commitments either real or implied, is not questioned but they fail to caution that those commitments should not be made until such commitments are correlated against an overall program, and will produce desired results at a cost commensurate with the resulting operating conditions. If a program is all thought out and set down on paper with an assurance that the results are economical for specific conditions, then firm commitments at this time are entirely in order.

Any planned work against a program projected into the future must take into consideration all of the factors pertinent to the problem. The first step is to find out what is on hand, not what is thought to be on hand. This requires a comprehensive appraisement of raw material supplies, power and steam supply, water supply, material handling and transportation facilities, labor markets, and conditions, drainage and waste disposal as well as the existing productive equipment and structures and their correlated arrangement including the terrain and the property in general with service connections. This appraisement should carefully consider and evaluate the expected useful life of the major productive machines and structures housing them.

The transition from the past to the future must pass through the present. The best that can be done is to make a skillful application of the present best knowledge to the particular conditions and requirements of the specific problems. New products, processes, equipment and procedures will be developed. Paper has gone a long way in providing a substitute material in the war effort but the acceptance of these substitutes under the conditions as they exist after the war is not apparent to the engineer. Other industries can be expected to put forth great effort to regain any lost ground and the public will demand that product which is best suited to the needs,

*The microlambert is a 1-millionth part of a lambert. It is the brightness of a perfectly diffusing and reflecting surface when illuminated by a source of unit candlepower placed at a distance of 10 meters.

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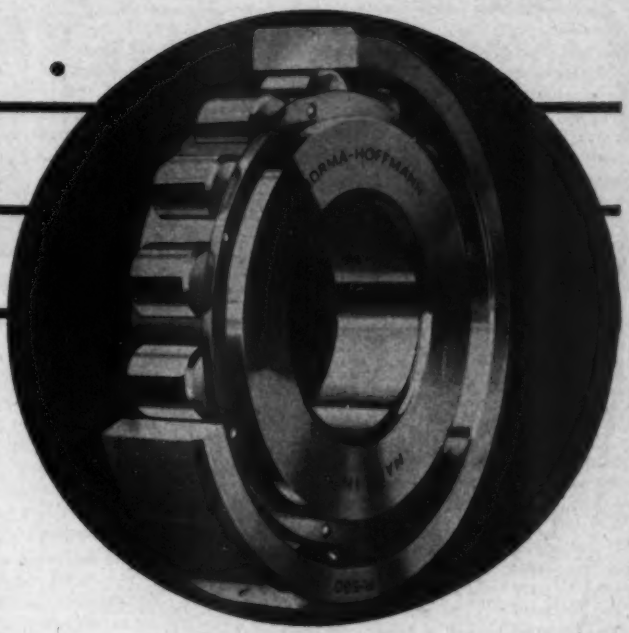


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The manufacturers will be kept informed as to the improvements, fully developed or contemplated, in equipment and processing through sales representatives and literature circulated by sales organizations. These are designed to arouse the desire to learn more about what is new. They serve a very useful purpose to industry and make up one of the impelling forces towards progress and improvements for the benefit of all. Through organizations such as the Technical Association of the Pulp and Paper Industry, the Superintendents Association and through industrial magazines much valuable data concerning what is new and what is under consideration can be obtained. However, careful and judicious analysis of the total problem is required to be able to make a skillful application of the proper equipment and structures to meet particular needs. Help is also available when needed from many specialized service organizations.

A change of products, productive rates, and what is able to be done in the matter of any planned program may be more logically governed by physical conditions than by radical developments in operating equipment and processes.

An assured supply of raw materials of adequate characteristics and quality is too fundamental to mention except in passing. If these supplies are available plus such supplies as can be anticipated as being desirable to meet with future growth and development of new products now in mind the producer is in a favorable position. These supplies must be such as to balance against productive equipment. Productive capacity must not get out of step with these supplies.

Good planning requires the combined and co-ordinated efforts of all departments of an organization. It must include consideration from heads of the personnel, sales, research, engineering, production, purchasing and financial departments and all others contributing to a successful operation organization. The desires and opinions of various department heads may at times be divergent. A solution to these divergencies of opinions and desires can be solved by setting the problem and various solutions down on paper both analytically and graphically. From this the most advantageous procedure to be followed to obtain overall economical operating conditions will become evident. The most important service an engineer can render industry at this time is to correlate pertinent data and the opinions of various department heads as it applies to all of the phases of the production problem involved and put this on paper in an understandable and comprehensive manner showing the physical limitations governing any solution.

## A Method for Determining Hydraulic Properties of Woven Wire Mesh Screens

**J. F. HALLADAY, Technical Director**
**American Coating Mills, Inc.**

The primary purpose of this paper is to set forth a method whereby a specific woven wire mesh cloth can be evaluated as to its ability to discharge reasonably clean, practically fiber free water under hydraulic heads of not less than 1 inch and while perhaps the law is applicable to heads above 30 inches, no experimental data are presented to substantiate this.

Textor and Gulbransen (*Paper Trade J.* 89, No. 13; 59-60, September 26, 1929; T. S. 91:145) have presented an approximate formula for determining the flow of water through woven wire mesh cloth and this paper does not alter in any practical way the fundamental concepts elucidated by them. It does, however, place in the hands of operating men a simple, easy method for obtaining specific information on the characteristics of a specific screen which may be desired for a specific application.

Standard texts (Merriman, Mansfield, *Treatise on Hydraulics,* New York, N. Y., John Wiley and Sons, 1910) on hydraulics give the formula for the theoretical time ($t$) for the head in a vessel to reach a given level as:

$$t = \frac{2A}{a\sqrt{2g}}(\sqrt{H} - \sqrt{b}) \qquad (1)$$

in which $t$ = seconds of elapsed time for head to fall from $H$ to $b$

$b$ = head in feet at elapsed time $t$.

$A$ = area of horizontal cross-section of vessel in square inches

$a$ = area of discharge orifice in square inches

$g$ = acceleratiton due to gravity = 32.16 feet per second per second

$H$ = initial head in feet when $t = 0$ when $b = 0$, the vessel is completely empticd and

$$t = \frac{2A}{a\sqrt{2g}}(\sqrt{H} - \sqrt{0.0}) = \frac{2A\sqrt{H}}{a\sqrt{2g}} \qquad (2)$$

It was theorized that if the approximate equation of Textor and Gulbransen applied to the screens being tested, this equation should apply and the experimental method was developed looking toward a further confirmation of the Textor and Gulbransen equation.

Careful scrutiny of the equation (1) will show that by adjusting the value of the ratio $A:a$ almost any desired rate of decrease in head could be obtained within a test cylinder discharging its contents through a wire screen placed in the orifice ($a$).

With this theory as a basis, the apparatus was designed and built.

The apparatus consisted of a Lucite tube 3.75 inches in diameter and approximately 40 inches long, at one end of which a means of clamping a thin metal plate was provided. In the center of the plate was a circular aperture to the exact margin of which was sweated the wire mesh cloth to be tested.

Preliminary experiments showed that no great difficulty would be encountered for the 3.75 inch-tube diameter used if the circular aperature in the thin steel plate at the bottom of the tube was between 11/16 inch and 15/16 inch. In conducting these experiments, no attempt was made to control for *p*H of the water. The plan of the experiment, however, did provide for starting heads of 30 and 20 inches, orifice diameter of .6875 and .91 inch and wire mesh screens of 40, 80, and 100 meshes per inch as well as water temperatures ranging from 44 to 122 Fahr. A synchronous electric clock which had been rebuilt to provide for a 12 inch dial divided into sixty equal portions, representing 1 second each, was used for timing the experiments. After being brought up to slightly above the desired temperatures, the water was placed in the drainage column with a small sponge rubber disc held over the discharge orifice. The flow was permitted to start when the clock registered approximately 0 seconds and the time at which the level of the water reached various acting heads was noted, as the height of the water column dropped due to the discharge of the water through the screens. Results were recorded and each trial was repeated. If the results of the two trials were in close agreement, the average of the two was recorded. If disagreement was apparent, tests were run until close agreement between three trials was obtained and the average of the three was recorded. As a matter of interest, after the first two trials were made, the experimental method became so familiar to the operator that no difficulty was encountered in securing good mutual confirmation from two tests.

A little reflection will show that it is not necessary to use a Lucite or other transparent type of tubing for the drainage column and that the ratio of the diameters which prevail in these experiments; i.e., $A:a$ could be increased by using a larger diameter vessel to be drained, i.e., the drainage vessel might be a clean 50-gallon steel drum or a small 5-gallon steel container and, of course, as the ratio $A:a$ is increased, the experimental observations are more readily and accurately made because of the slower fall of the acting hydraulic head.

Returning to the original formula, which it was theorized would apply to a system such as that being investigated, we find that

$$t = \frac{2A}{a\sqrt{2g}}(\sqrt{H} - \sqrt{b}) \qquad (1)$$

Since this formula is for theoretical relations, the value ($t$) is an absolute mini-

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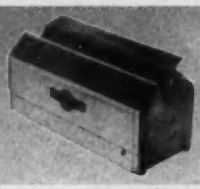

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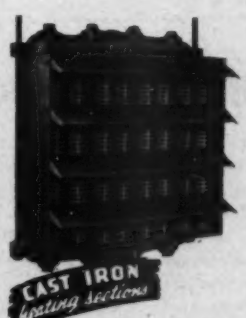


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mum (unless dischage coefficient of the orifice is greater than 1.0) and for experimental conditions, will be greater than the calculated theoretical value by an amount equal to: $(t \div k) - t$, in which $(k)$ is the discharge coefficient of the orifice through which the flow occurs. Thus:

$$t = \frac{2A}{a\sqrt{2g}}(\sqrt{H} - \sqrt{b}) \bullet \frac{1}{k} \qquad (3)$$

$$k = \frac{2A}{at\sqrt{2g}}(\sqrt{H} - \sqrt{b}) \qquad (4)$$

Using Equation (4) with the experimentally observed values of $(b)$ and $(t)$ as the values of $(k)$ for various wires, temperatures and orifices were calculated.

Formula (3) was then used to calculate elapsed time required for each of the trials to reach each of the heads at which the elapsed time was experimentally observed.

Practically all the points in excess of 5 seconds showed errors no greater than 5 per cent between the observed and calculated time. It, therefore, appears that whenever such good correlation is attained, one is justified in applying the formula:—

$$t = \frac{2A}{ak\sqrt{2g}}(\sqrt{H} - \sqrt{b})$$

from which equation it follows that the time rate of drop in head expressed in feet per second:—

$$\frac{db}{dt} = -\frac{ak\sqrt{2g}\sqrt{b}}{A}$$

and thus varies directly with area of the discharge orifice, hydraulic discharge coefficient of screen, square root of acceleration due to gravity, square root of hydraulic head, and inversely with area of cross section of the vessel being emptied. Thus, in the cases studied, the well known common hydraulic laws governing discharge through orifices hold true.

It would appear, therefore, that the method and apparatus can be applied safely to determinations of rates of flow of fiber-free water through wires used in paper making processes involving hydraulic heads of 1 inch to 30 inches and probably at heads greater than 30 inches although the experiments do not cover heads above this level.

## Experiences of a Paper Mill in Bacteriological Control

GEORGE M. SUYDAM[1] and RUTH B. McCONKY[2]

In 1937, the increasing use of paper in the manufacture of food containers, and especially of milk bottles, raised the question of the bacterial condition of these papers. Investigation of this condition was started in our mills, with particular attention being paid to the one machine which produced the majority of these grades. The problems encountered and the practices employed in solving them may be of value and interest to others in initiating a similar program. Many of the initial steps taken were those of promoting general cleanliness and good housekeeping which served to eliminate obvious sources of contamination as well as to improve appearances, i.e., these measures included the placing of baffles on beating and refining equipment where splatter might occur, and the painting of equipment so that disorder would be more obvious and, as a result, more readily corrected.

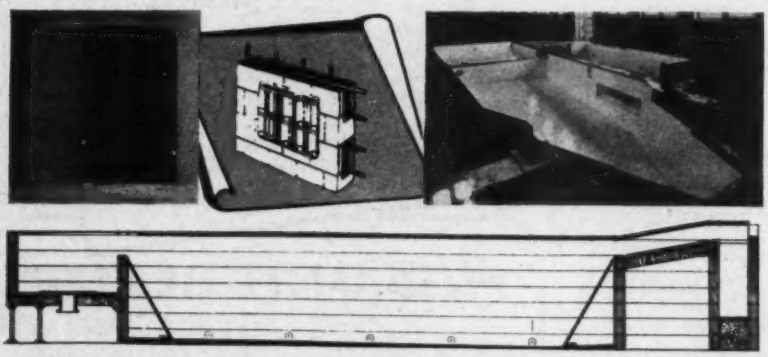
(1) Water Treatment Supervisor, (2) Bacteriologist, Riegel Paper Corporation.

The water supply was made the object of the first study, since contamination from this source would be introduced at each step in the process. The source of water is the Musconetcong River which originates in Lake Hopatcong and receives pollution only from natural sources. The entrance to the treatment plant consists of a race about ¼-mile long which acts as a presedimentation basin for the 7,000,000 gallons of water which are treated daily. Near the end of the race, chemical feeders are used to add alum and lime to the water in proportion to the amount of color and turbidity present, after which coagulation and sedimentation take place in a cement lined settling basin. Norwood rapid sand filters completed the water treatment at the time the bacteriological investigation was started. Preliminary surveys of the water system showed that the water should receive further treatment to guarantee a low bacterial count.

The first step was chlorination of the water just prior to the filters. In order to avoid the possible sudden loosening of foreign material from the pipes, a small dosage of chlorine was used initially and was increased gradually until residuals were maintained throughout the water system. At the start, sufficient chlorine was added to maintain a residual of 0.1 ppm in the water going to the filters. This was not sufficient to carry a residual in the filter discharge. After about 2 weeks, the chlorine dosage was increased to a residual of 0.2 ppm on top of the filters. The chlorine feed was thus gradually increased over a period of about 6 months until a residual of 0.4 ppm chlorine was noted in the filtered water. This method of chlorination was found to be effective not only in delivering low count water, but also in decidedly improving the operation and cleanliness of the filters.

Chloramine treatment was used after the initial cleaning up of the water system with the thought that the sterilizing effect would be carried farther along into the stock system. A residual of 0.5 ppm at the showers on the paper machine was thought adequate. Bacteriological examination throughout the system showed improvement in conditions, but counts on the finished paper did not reflect this improvement. Therefore, the chlorine residual at the machine showers was further increased to 1.0 ppm chloramine, which was continued until Griffin (Tech. Assoc. Papers, 24:189-191, June 1941) called attention to the advantages of break-point chlorination.

Experiments with this treatment indicated that its use in the filtered water would carry chlorine residuals farther, thereby im-



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proving the bacteriological condition of the entire system. When this method of chlorination was instituted, it was found that the initial point of application did not give sufficient contact time for optimum results. So, the point of application was changed to the raw water as it entered the settling pond, which increased the contact time from 1 hour to 4 hours. This increased contact time, with 1.0 ppm break-point residual, was found to be most efficient in the production of low count, tasteless, and odorless water. In conjunction with break-point chlorination, a change in the design of the settling basis contributed to the uniformity of the delivered water regardless of fluctuations in the quality of the raw water. This change insured uniform distribution and eliminated channeling, thus improving coagulation during periods of high run-off. The improvement in the bacterial condition of the water resulted in a definite improvement throughout the papermaking system. For a time this improvement was reflected in the finished paper counts, but since these counts did not remain consistently low, it was evident that water treatment alone was not the solution to the maintenance of low counts throughout the process.

In this mill, the pulp and broke are disintegrated, bleached and stored in separate systems until they are blended in the beater tugboat. Surveys of the stock system had shown that the pulp as originally furnished had very low counts and that they remained low through the bleaching process and up to the point where broke and starch were added in the beaters. Investigation of the broke system revealed that contamination was being introduced not only from the broke, but that an open topped broke chest was being contaminated through faulty drainage of the floor above. To correct this condition, the drains were repaired, and to prevent a possible recurrence, this chest was covered. It was found that, if the *p*H of the broke was lowered to 4.2 by the addition of alum, a build-up in count in the chest was prevented. To insure cleanliness, the entire broke system was sterilized with 1000 ppm of chlorine as bleach liquor. This was allowed to stand for several hours in the broke beater and in the broke chest, and then was pumped through the stock system, including the vats on the machine, during each week and shutdown before running food container paper.

Since starch was found to be another source of considerable contamination, certain practices were adopted to assure its sterility. Containers were designed for the preparation of single batches of starch. These small drums, provided with a pouring lip, were mounted on a truck so that they could be dumped directly into a beater. The drums were cleaned with live steam. After boiling the starch, sufficient bleach was added to prevent the growth of organisms.

These practices tended to eliminate the high counts in the beater furnish, and our experience has been that the count further decreased during the beating cycle after the addition of the chemicals, but, in spite of this, occasionally high counts developed in the refining system and machine storage chests.

To maintain low counts farther along in the system, a trial was made, allowing some of the chlorine to remain in the pulp after the bleaching process to carry residual through the entire process and on to the machine. This served to keep the stock counts low, but caused serious foaming trouble on the machine, and therefore, was not a practical solution to the problem. A second trial consisted of adding bleach liquor to the head box. This reduced the count in the vats to as low as 10, but when sufficient quantities of bleach were used to attain such low counts, foaming trouble was encountered again, and the method of application was cumbersome because of the large volume required. Substituting the direct application of chlorine gas reduced the objectionable foaming, but did not completely eliminate it, and dangers of this method of application are obvious. To overcome these objections, and to give better dispersion of the chlorine, thus increasing its effectiveness, chlorine solution feed was adopted. The solution originally was fed to the head box and to the stock dilution water. Experiments showed that the same amount of chlorine was more effective when divided and added at these points than when added at only one point.

Up to this time, attempts to maintain a chlorine residual were made only when running food container papers. It was found, while using this intermittent method of chlorination, that the paper counts increased for a short time after chlorination was started. It was thought that continuous chlorination would prevent this increase by keeping the system clean and preventing build-up in counts at points of poor circulation. This was borne out by considerable increase in paper counts when continuous chlorination of the white water was first adopted, with an even greater decrease in paper counts after about 3 months.

To further increase its effectiveness by lengthening the contact time of the chlorine in the white water, the feed was further divided and added to the white water discharge of each cylinder. When this change was first made, the counts in the finished paper again increased, but after 3 months, they had decreased to a point lower than any previously obtained.

Throughout the bacteriological investigation, a great deal of attention has been paid to the condition of the calender water, since much emphasis had been placed on the recontamination of paper from this source. Several methods were tried to insure the sterility of this water. When the mill water supply contained a chlorine residual of 0.5 ppm, it was rechlorinated for the calenders to a residual of 2.0 ppm. The water boxes and pulp dams were soaked in bleach liquor before each run of food container paper to cut down contamination from this source. With this procedure, the inlet water was sterile, but a count developed in the boxes as the temperature of the water increased and the chlorine was liberated. Therefore, the water source was changed to steam condensate from the drying cylinders which was first cooled and then chlorinated. Ammonia also was added to carry the chlorine residual throughout the

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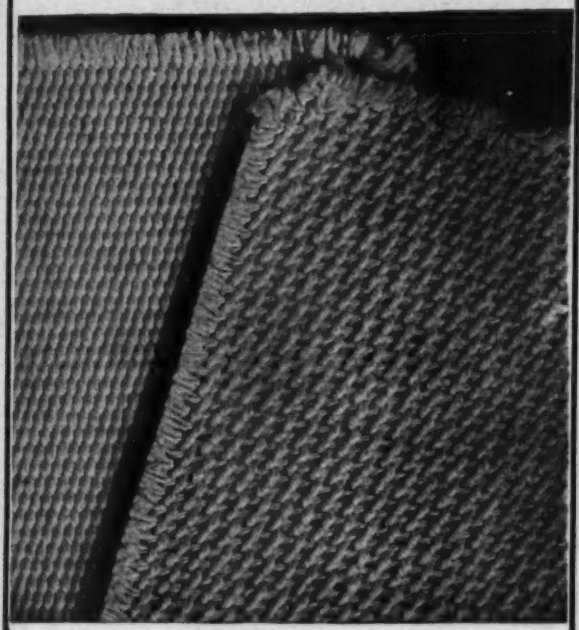

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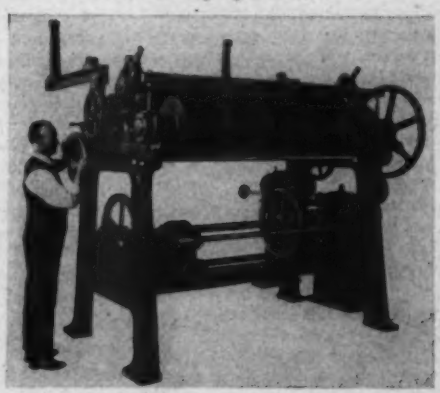

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boxes. The water leaving the boxes was found to be sterile, but no effect was noted on the finished paper counts at this time. A further precaution taken at this step in the process consisted of installing air filters to guard against contamination from the blowers which direct cooling air against the calender rolls.

At the advent of break-point chlorination of the mill water, the use of chlorinated condensate in the calender boxes was discontinued because it was found that the break-point chlorinated water would remain low in count and retain a chlorine residual throughout the boxes, if a sufficiently high rate of flow was maintained the prevent the development of high temperatures and the consequent liberation of the chlorine as gas. Tests were continued to determine the effect of the calender water count on the finished paper. The counts were taken over a period of time on various grades made on the same machine. They include those of grades other than food container papers, where high counts developed in recirculated solutions which are used on certain specialty papers to obtain desired finishes. In spite of the fact that no effect can be found on the actual count of the paper when high counts are present in the calendar water, only the filtered mill water, of drinking quality is used on papers intended for use in food containers. This practice is followed not only because of the sanitary aspect, but also because it was found that the recirculated calender solutions could impart undesirable tastes and odors to the finished paper.

When some work had been done in the company's bacteriological laboratory, it was noted that certain types of colonies consistently appeared on the agar plates from the water and on through to those of the finished paper. The two most predominant types, as determined by repeated appearance on agar plates, were identified by Dr. Appling at The Institute of Paper Chemistry as B. megatherium and B. mycoides, var. The unusual heat resistance of these organisms is described by him (Applying, J. W. and Shema, B. F. Tech. Assoc. Papers, 25: 251-255, June 1942).

Since these spore formers are not killed by the heat of the driers, the problem was to reduce their number in the stock system in order to produce paper with a limited total agar plate count. It is believed that all of the measures outlined here have contributed to this end by keeping the entire system clean, thus preventing an increase in the numbers of these resistant types at any one point. Because the paper machine offers opportunities for build-up in counts through the recirculation of white water and the intermittent use of some of the vats with the resulting dead ends more immediate effects were noted on the finished paper counts through chlorination on the machine than through any other one treatment.

To obtain reduced counts through white water chlorination, it has been found necessary to feed sufficient chlorine to carry a residual in the vats. However, the results also show that low counts are not obtained through white water chlorination alone, for even with chlorine residuals in the vats, high paper counts result from decreased or interrupted fresh water chlorination.

## Pros and Cons Regarding the Recovery of Fibers from White Water

K. W. FRIES[1] and J. D. GAFFNEY[2]

The recovery of fibers from pulp and paper mill effluents always has been a controversial question among papermakers. On the one hand, it is desirable to reduce losses of valuable solids with the outgoing white water to a minimum. On the other hand, many white waters that circulate around in the mill are wash waters containing suspended solids such as pitch, ray cells, and fiber fragments which are undesirable in the stock and should be removed before the water is sent back into the operating system.

To shed some light on the problem—which white waters carry valuable solids, and which carry a type of solids that should be eliminated—a qualitative survey was made of the white waters from the paper machines on the different grades and from the different operating steps in the paper mill.

Preliminary microscopic studies revealed that whenever recirculated water caused trouble, it was especially rich in pitch-carrying ray cells.

In the survey, the number of ray cells in the white water solids was determined by microscopic count in a given field. Another slide was used for photomicrographs so as to have a permanent record for future reference. For the microscopic count the slides were stained with the "C" stain (Graff, J. H., *Paper Trade J.*, 100, No. 16:45-50, April 18, 1935). The method employed for making the photomicrographs was that of Perot and Schultz (*Paper Trade J.*, 117, No. 23:33-4, December 2, 1943). These slides were not stained.

A summary of results of the paper mill survey is given in Table I. The different grades are listed from Nos. 1 to 11 according to degree of hydration, the most hydrated sheet being No. 1 and the freest, No. 11.

It can be seen that with highly hydrated sheets and with those containing mineral filler, the white water contains less pitch-carrying ray cells than with freer sheets that are not loaded. Slow sheets permit considerably fewer ray cells to filter through the mat than free sheets since the fiber mat on the wire is apparently so dense that the ray cells cannot escape with the white water, and consequently remain in the sheet. They are, therefore, taken out of circulation and cannot do any harm.

With a free sheet, however, the ray cells are washed out of the web and pass through the wire with the white water. If the fibers are recovered from the white water, a serious condition, therefore, will be created due to accumulation of pitch on the wire, and a decision must be made as to whether or not fibers should be recovered, and if so, what should be done with them. If necessary, because of a shortage of water, to re-use the water in the system, the fibers should first be separated from the water before it is sent back to the stock system.

However, where the white water is only used for showers on the return wire, it should not be necessary to eliminate the fibers because the impact of the water on the wire is so forceful that the small ray cells are driven through the wire and cannot accumulate into spots.

It also can be seen that a certain degree of elimination of ray cells takes place as the white water passes through a Bird save-all. The effluent contains a larger percentage of ray cells than the ingoing white water and the ray cell content of the recovered fibers is slightly less.

A survey of the pulp mill gave some very striking results. It showed that a thorough study of the quality of the sus-

(1) Technical director and (2) chemist, Rhinelander Paper Company.

TABLE I.—White Water Survey of Paper Mill

| Grade No. | Ray Cells by Number in Fibrous Materials | | | Remarks |
|---|---|---|---|---|
| | White Water to Save-all Per Cent | Recovered Fibers Per Cent | Save-all Effluents Per Cent | |
| 1 | 12.7 | 10.3 | 16.0 | Contains $TiO_2$ |
| 2 | 15.2 | 13.5 | 22.7 | Contains $TiO_2$ |
| 3 | 18.4 | 14.5 | 21.5 | |
| 4 | 18.3 | 13.1 | 25.9 | |
| 5 | 20.1 | 14.3 | 22.5 | |
| 6 | 22.5 | 19.1 | 22.9 | |
| 7 | 23.6 | 16.6 | 27.5 | |
| 8 | 26.1 | 17.7 | 32.7 | |
| 9 | 26.9 | 20.0 | 30.6 | |
| 10 | 38.5 | 32.9 | 44.0 | |
| 11 | 72.1 | ... | ... | |

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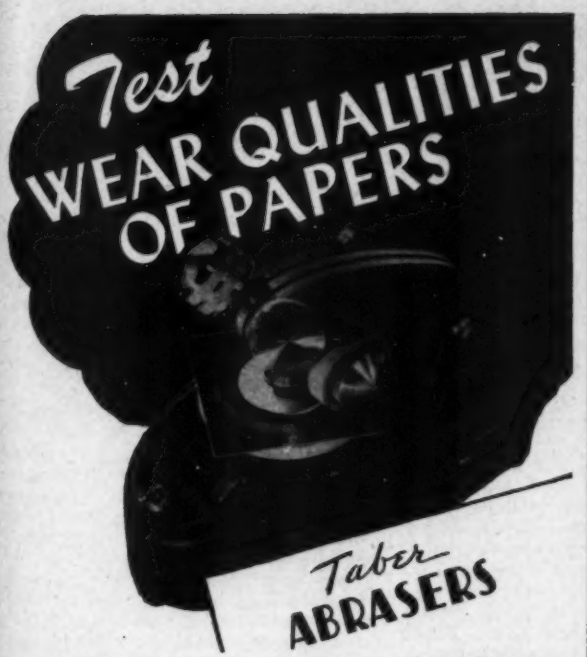


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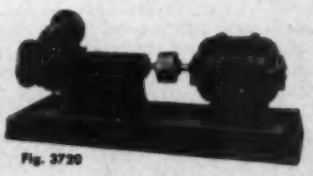
Fig. 3720

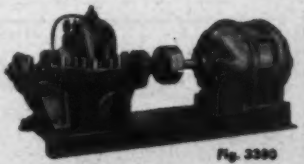
Fig. 3380

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TABLE II

| Sample No. | Ray Cells by Number in Solids of White Water | | | |
|---|---|---|---|---|
| | White Water Tank Per Cent | White Water from Thickeners Per Cent | White Water from Deckers Per Cent | White Water from Wet Machine Per Cent |
| 1 | 90.8 | 78.5 | 89.4 | 69.6 |
| 2 | 88.8 | 54.3 | 88.4 | 89.0 |
| 3 | 66.7 | 67.6 | 80.6 | 79.0 |
| 4 | 85.5 | 68.3 | 81.7 | 73.8 |
| 5 | 74.6 | 77.8 | 74.8 | 82.4 |
| 6 | 84.8 | 65.0 | 88.0 | 71.8 |
| 7 | 79.8 | 65.3 | 83.2 | 77.0 |
| 8 | 84.2 | 59.2 | 76.5 | 68.7 |
| 9 | 88.2 | 65.6 | 87.3 | 77.6 |
| 10 | 86.3 | 71.8 | 89.7 | 89.6 |
| 11 | 88.7 | 60.0 | 92.8 | 92.8 |
| 12 | 84.3 | 80.0 | 91.8 | 86.9 |
| 13 | 53.6 | 66.0 | 93.4 | 89.6 |
| 14 | 88.5 | 76.8 | 87.0 | 89.5 |
| 15 | 91.5 | 66.3 | 94.0 | ... |
| Av. | 82.3 | 68.1 | 87.0 | 81.0 |

pended material in the white water should be made before decisions are made in regard to white water utilization.

Table II shows that the fibers contained in the pulp mill white water are of no value for papermaking and, therefore, should be removed before the white water re-enters the stock system.

The disposition of these recovered ray cells depends on the local conditions. To discharge them into the stream is hardly recommendable because it may invoke the criticism of State Health Departments and of Fish and Game Commissions. It may be possible to incorporate them in some board grades or to segregate for chemical utilization. They are very rich in pitch, especially in ether extractables and may yield some valuable materials if properly treated.

It may be suggested that wherever the problem of recovering solids from white water or of re-circulating white water is under discussion, a careful study should be made as to the quality of the suspended material before a decision is made. The outcome of these rather inexpensive investigations may safeguard against serious disappointment at a later time. These studies will also be very helpful in choosing the most efficient type of save-all for removal of the suspended solids.

## A Rapid Cupriethylenediamine Viscosity Method for Control Work

R. M. LEVY[1], P. MUFFAT[2], and W. D. HARRISON[3]

In the past many rapid methods of viscosity determination have been proposed (Doering, H., *Papier-Fabr.*, 38:80-82, 1940; Ennevaara, F. A., *Paper Trade J.*, 104, No. 18:243-44, May 6, 1937; Fabel K., *Kunstseide*, 18:5-7, 1936; Rich, E. D., *Pacific Pulp Paper Ind.*, 14, No. 11:18-23, 1940). The majority of all these methods use the relatively unstable cuprammonium solvent.

The most serious disadvantage in the use of all previous procedures for a rapid viscosity determination is the obtaining of a known sample weight in a relatively short period of time, especially if wet samples are received. In all the proposed procedures for a rapid viscosity determination, some rapid means of drying is usually necessary.

The present authors propose a method whereby the moist pulp sample is used directly without drying. The relative advantages of such a method can be readily appreciated.

The technique consists of first subjecting the wet pulp to a wet disintegration. The wet disintegrated pulp is then measured volumetrically into a dissolving tube and an equal volume of double strength (1.0 M in copper) cupriethylenediamine solution is added to the pulp suspension. The pulp is stirred for 5 minutes and the viscosity determined with a capillary viscometer. An aliquot of the pulp suspension is also taken volumetrically, filtered on a Buchner, dried on a steam cylinder, and finally weighed in a conventional type of heated pulp balance. The viscosity is then corrected to a standard weight from a set of simple tables provided. The entire test from start to finish requires approximately 20 minutes. This test lends itself readily to "mass production," is simple and inexpensive to carry out (unskilled workers have no trouble with the whole procedure), and the results obtained are reproducible within 1 per cent or better.

The solvent and its method of preparation has been described in a previous communication (Straus, F. L., and Levy, R. M., *Paper Trade J.*, 114, No. 3:31-34, January 15, 1942). For the purpose at hand, the solvent is a solution of cupriethylenediamine saturated with cupric hydroxide and 1.0 M in copper.

This method of viscosity determination lends itself readily to pulp and paper mill control. The short stirring time where only small air surface is exposed causes a negligible change in viscosity. Dilution of the cellulose cupriethylenediamine with water causes no precipitation of the cellulose as it does in the corresponding cuprammonium system; hence the capillary viscometers can be readily cleaned with water. In this method the several operations can be carried out simultaneously and one operation need not be finished before another is begun. This factor is one that makes for satisfactory control with the least effort and the least number of precautions, an advantage over previous methods of viscosity control. Also, duplicate moistures and viscosities on each disintegrated pulp sample can be made together without prolonging the time over that required for a single determination.

(1) Director of Research, (2) Research Chemist, and (3) Technical Director of the Ecusta Paper Corporation.

## Power Load on Calenders of Newsprint Machines

W. G. MacNAUGHTON
News Print Service Bureau

In a series of studies on the operation of newsprint machines, among the collected data was the power required to drive the calenders. In this paper the calender load of twenty machines covers a range of speed from 1100 to 1345 fpm and on calender stacks of a considerable diversity in the number and size of rolls.

While one of the machines required 0.410 kw. per inch; and another 0.530 kw. per inch; with two others, 0.256

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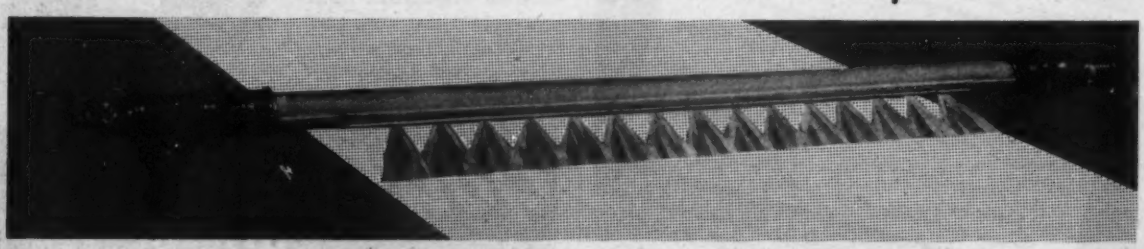

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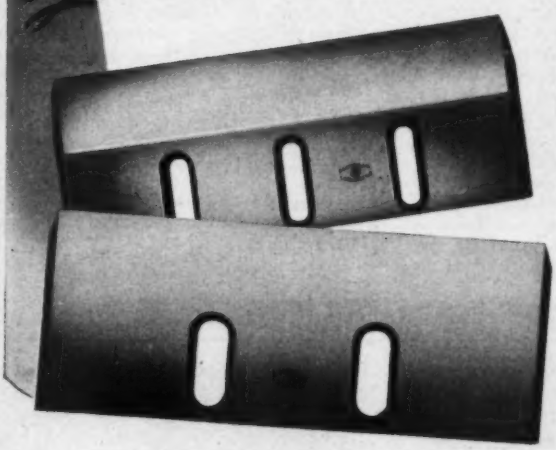

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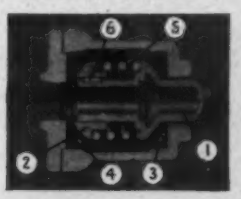


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TABLE I.—Press Load On Newsprint Calenders

| Machine No. | Speed f.p.m. | Weight of All Rolls lb./in. | $S \times \frac{W}{F}$ / 1000 | Power Kw/in. |
|---|---|---|---|---|
| 1 | 1100 | 617 | 679 | .370 |
| 2 | 1250 | 544 | 680 | .350 |
| 3 | 1280 | 534 | 683 | .332 |
| 4 | 1270 | 540 | 686 | .344 |
| 5 | 1260 | 548 | 688 | .371 |
| 6 | 1150 | 642 | 738 | .358 |
| 7 | 1160 | 640 | 742 | .365 |
| 8 | 1120 | 667 | 746 | .354 |
| 9 | 1190 | 646 | 768 | .530 |
| 10 | 1200 | 668 | 804 | .377 |
| 11 | 1300 | 622 | 809 | .320 |
| 12 | 1300 | 630 | 819 | .350 |
| 13 | 1200 | 685 | 822 | .410 |
| 14 | 1099 | 750 | 826 | .356 |
| 15 | 1099 | 757 | 832 | .285 |
| 16 | 1280 | 679 | 869 | .340 |
| 17 | 1298 | 693 | 900 | .390 |
| 18 | 1280 | 717 | 917 | .360 |
| 19 | 1335 | 694 | 928 | .380 |
| 20 | 1345 | 695 | 935 | .370 |

TABLE II.—Calender Load vs. Speed—Machine No. 18

| Reading No. | Speed f.p.m. | Weight of All Rolls lb./in. | $S \times \frac{W}{F}$ / 1000 | Power Kw/in. |
|---|---|---|---|---|
| a | 745 | 717 | 535 | .171 |
| b | 750 | 717 | 538 | .184 |
| c | 760 | 717 | 545 | .171 |
| d | 775 | 717 | 555 | .184 |
| e | 830 | 717 | 594 | .180 |
| f | 840 | 717 | 602 | .189 |
| g | 860 | 717 | 626 | .215 |
| h | 885 | 717 | 634 | .206 |
| i | 905 | 717 | 648 | .215 |
| j | 915 | 717 | 656 | .219 |
| k | 945 | 717 | 678 | .250 |
| l | 985 | 717 | 706 | .228 |
| m | 1040 | 717 | 746 | .307 |
| n | 1060 | 717 | 760 | .297 |
| o | 1140 | 717 | 817 | .316 |
| p | 1160 | 717 | 832 | .320 |
| q | 1180 | 717 | 846 | .316 |
| r | 1210 | 717 | 868 | .348 |
| s | 1240 | 717 | 889 | .342 |
| t | 1275 | 717 | 914 | .361 |
| u | 1290 | 717 | 925 | .364 |
| v | 1300 | 717 | 932 | .373 |

and 0.285 kw. per inch, for all the others the load is between 0.320 and 0.390 kw. per inch in spite of the variation in speed and weight of the calender rolls (Table I).

Upon increasing the speed of Machine No. 18 from 745 to 1,300 fpm, the weight of the calender rolls being the same, the load increased from 0.171 to 0.372 kw. per inch (Table II). For 74.5 per cent increase in speed the load increased 117.5 per cent or for each 1 per cent in speed the load increased 1.58 per cent.

It had been pointed out that the draws or sheet tension between the calenders and the dryers on one hand and the reel on the other had a definite effect on the calender load. As an evidence of this, data were taken on Machine No. 6 and its identical companion machine operating at the same speed. The readings were taken under four conditions:

I. Normal operation with sheet to reel

II. Normal operation but without sheet to reel

III. With slack draw to calender and without sheet to reel

IV. With no stock on wire and consequently no paper in dryers to calenders or to reel.

In Case I, under normal operation with tension of reel assisting the calenders and with a tension on the dryers, the calender load is 0.350 kw. per inch.

In Case III, with no sheet on the reel to assist and with very slack draw to reel, presumably no tension, the calender load is 0.293 kw. per inch. Consequently, 0.350 — 0.293 = 0.057 kw. per inch would represent the load on the calenders due to the excess tension on the dryers compared with the tension exerted by the reel on the calenders. In other words, 0.057 kw. per inch represents the net tension load on the calenders.

Considering Case III in which the sheet is passing through the calenders without the help of the reel and with no tension on the dryers, and Case IV where the calenders are running with no paper and overcoming friction only, the difference in the calender loads (0.293 — 0.13585 = 0.15715 kw. per inch) then represents the power load to smooth the sheet in its passage through the calenders.

From the foregoing relationships the following breakdown can be made.

Net tension load on the calender ....0.057 kw. per inch = 16.3%

Friction load..0.13585 kw. per inch = 38.8%

Power required for smoothing the sheet.....0.15715 kw. per inch = 44.9%

100.0%

## The Kraft Pulping of Southern Tannin-Rich Woods

LOREN V. FORMAN, Research Associate
The Institute of Paper Chemistry

The need for a new domestic source of tanning materials has been increasing as the existing supply of chestnut has gradually diminished. This need has become more critical during the war because of the increased demands for tanning materials and to the uncertainty or failure of foreign sources of tanning materials.

In recognition of this need, the Rockefeller Foundation has sponsored an extensive factual survey of all the available tanning materials in the Southeastern United States. This survey is being carried out by Dr. Alfred Russell of the Department of Chemistry at the University of North Carolina, Chapel Hill, North Carolina. Russell (Natural Tanning Materials of the Southeastern United States. IV. *J. Am. Leather Chemists Assoc.*, 37, no. 7:340-356, July, 1942; 38, no. 1:30-34, no. 4:144-148; no. 7:236-238, Jan., April, July, 1943) has collected several hundred specimens which are being identified botanically and examined for tannin content. Where tannins are present, extracts are being prepared and used in the experimental manufacture of leather from pickled calf stock. Further tests are carried out with the more promising materials.

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Official photo U. S. Marine Corps. The marine is preparing to open fire with his Thompson submachine gun. He crouches to better stand the recoil of his "Tommy" friend.

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In the case of chestnut, the feasibility and economic advantages of using the extracted wood for pulp production have been demonstrated. With the present shortage of pulpwood in the United States, it would be particularly interesting if a new domestic source of tannin should prove to be suitable also as a raw material for pulp production. Of the several hundred species collected by Russell, a selected group are being examined for their pulping characteristics at The Institute of Paper Chemistry, Appleton, Wisconsin. Although most of the samples in this group are of particular interest because of their tannin content, a few containing no tannin have also been included. The purpose of this paper is to summarize the sulphate pulping characteristics of the specimens examined experimentally thus far. Additional data will be reported as the work progresses.

This report presents the puping results on 22 of the species submitted by Russell. Of these, six were found to contain no tannins in the bark or the wood, eight contained tannins in the bark alone, and eight contained tannins in both bark and wood. The tannin extracts of the tannin-bearing species have yielded good specimens of leather and may be considered as possible sources for tannins to supplement our present supplies.

The following species were evaluated for pulping characteristics:

1. *Cerothamus ceriferus* (L) Small (syn. Myrica cerifera *L.*),† wax myrtle, scrub myrtle, bay berry.
2. *Sideroxylon foetidissium* Jacq., mastic, wild olive.†
3. *Acacia auricularis,* bullhorn acacia.†
4. *Nectandra coriacea* (Sw.) Griseb., lancewood.†
5. *Casuarine equisetifolia* Forst., Australian pine, beefwood, horsetail tree, she oak, whistling pine, polynesian ironwood.†
6. *Acer rubrum* var. *tridens,* Carolina red maple.†
7. *Coccolobis laurifolia* Jacq. (syn. *Coccolobis floridana* Meisn.), pidgeon plum.†
8. *Conocarpus erecta* L., buttonwood, zaragoza mangrove.‡
9. *Eugenia confusa* DC. (*Eugenia garberi* Sarg.), snakewood, ironwood.‡
10. *Coccolobis envifera* L. Jacq., sea grape, grape tree, platter leaf.‡
11. *Laguncularia racemosa* Gaertn. f., white mangrove, white buttonwood.‡
12. *Eugenia axilloris* (Sw.) Willd., white stopper.‡
13. *Annona glabra* L., pond apple, custard apple, alligator apple.†
14. *Avicennia nitida Jacq.,* black mangrove.*
15. *Elaphrium simaruba* (L.) Rose, gumbo limbo.*
16. *Exothea paniculata* (Juss.) Radik., inkwood, ironwood, butterbough.‡
17. *Eugenia rhombea* (Berg.) Urban, red stopper.‡
18. *Drypetes diversifolia* Krug and Urban, whitewood.*
19. *Icthyomethia piscipula* (L.) A. Hitch., Jamaica dogwood.*
20. *Guaiacum sanctum* L., lignum vitae.*
21. *Lysiloma bahamensis* Benth., wild tamarind.‡
22. *Gymnanthes lucida* (Sw.), crabwood.*

*No tannin in bark or wood.
†Tannin in bark only.
‡Tannin in both bark and wood.

The quality of the chips produced from a majority of the species was very poor. The excessive amount of sawdust, the oversize splinters, and the nonuniform chip length may have been caused by low moisture content, as well as to high density and hardness, of the wood.

Both extraction and pulping were performed in a stainless-steel vertical experimental digester equipped for indirect steam heating and forced circulation. For extraction, the chips were placed in the digester and covered with distilled water. The temperature was raised to 98 C. and the hot water was circulated through the digester for 3.5 hours. After this, the liquor was drained off and another charge of distilled water was added. The extraction was continued until four cycles were completed. After the leached chips were removed from the digester, their moisture content was determined before the sulphate cook was performed. The species containing no tannin in the wood were not leached before cooking.

| | |
|---|---|
| Total active chemical (as NaOH), based on oven-dry wood, per cent | 24.0 |
| Sulfidity, per cent | 33.3 |
| Water ratio, ml. water/g. oven-dry wood | 5.0 |
| Maximum temperature, C. | 174 |
| Time to maximum temperature, hr. | 1.5 |
| Time at maximum temperature, hr. | 3.5 |

At the end of the cook, the digester pressure was rapidly relieved to 50 p.s.i. before blowing. The pulp was washed in the blow pit with warm water and screened on a 0.010-inch cut diaphragm screen.

Large variations in pulp yields, permanganate numbers, and screenings were observed. Certain of the woods yielded pulps of rather low permanganate number containing high percentages of screenings, whereas other pulps of very high permanganate number contained but small amounts of screenings. Most of the pulps that were found to be superior in one or more respects were also found to be decidedly inferior in others. It is difficult, for this reason, to single out any wood or group of woods as being the most desirable from the point of view of pulping and papermaking.

From the standpoint of producing a high yield of pulp of low permanganate number and low screenings, probably the most desirable woods are the following: Carolina red maple, mastic, acacia, pond apple, and Australian pine.

Densities of handsheets made from the pulps of several species were abnormally low, as in the case of whitewood, Australian pine, snakewood, and red stopper. The remaining species covered a range of densities increasing until, as in the case of Carolina red maple, gumbo limbo, wax

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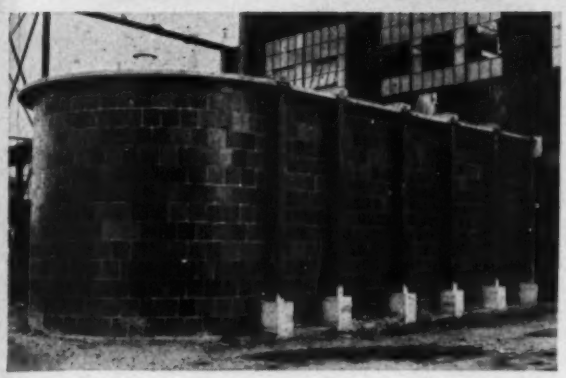

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myrtle and inkwood, the densities were comparable with those found in normal pulps. There was no definite correlation between strength properties and the pulp density.

Bursting strengths of the pulps examined varied considerably. The very best pulps showed fairly high values, approaching those found in average, normal hardwood pulps. The highest bursting strengths were found in the pulps produced from Carolina red maple, acacia, inkwood, snakewood, and Australian pine.

The tearing strength of all the pulps investigated was inferior to the better southern hardwood kraft pulps, such as gum. The pulps having the best tearing strength values were white stopper, Australian pine, lancewood, snakewood, and pond apple.

Tensile strength properties paralleled quite closely the bursting strength properties in most cases. The best tensile values obtained approached the values expected from a normal commercial hardwood pulp. The highest tensile strength properties were found in the pulps produced from Carolina red maple, acacia, inkwood, wax myrtle, and lancewood.

From an over-all consideration of the pulping characteristics of the wood and the physical properties of the resulting pulps, the most promising species appear to be Carolina red maple, Australian pine, acacia, lancewood, snakewood, white stopper, pond apple, and wild tamarind.

Lancewood, Carolina red maple, pond apple, acacia, and Australian pine are the most promising of those species which contain tannin only in the bark. The pulp produced from lancewood had good strength properties, although its tannin content may be too low for commercial extraction. Pulps from Carolina red maple and acacia had low tearing strength. The tensile and bursting strength of Australian pine was somewhat lower than that of the other pulps in this group.

Of the dual purpose woods—i.e., those containing tannin in the wood and bark—the best species from the standpoint of pulp characteristics are white stopper, snakewood, and wild tamarind. Snakewood gave a relatively low yield of pulp. The poor tearing strength of wild tamarind may be a disadvantage for certain uses.

The species which have no tannin in the bark or wood produced pulps which were inferior in strength characteristics.

**Acknowledgment**—The experimental portion of this paper was carried out by Donald Niemeyer, Walter P. Molda, and K. Helge Holm of the Institute staff.

# PAPERMAKING PATENTS

**IN THE UNITED STATES — Compiled by James Atkins, Registered Patent Attorney**

**Inquiries should be addressed to James Atkins, Munsey Building, Washington, D. C.**

## Method and Apparatus for Separating Heavy Particles from Paper Pulp Suspensions

Patent No. 2,312,706. Horace Freeman, Three Rivers, Quebec, Canada, assignor to Nichols Engineering & Research Corporation, New York, N. Y., a corporation of Delaware. Application November 19, 1938, Serial No. 241,360. 2 Claims. (Cl. 92—28). 1. The method of separating from paper pulp suspension, undesired particles which are heavier or more compact than the desired suspended matter, which comprises establishing a downwardly and helically flowing annular body of the suspension, providing an annular obstruction in the path of such flow for directing the same as a more restricted flow through the center of such obstruction, then causing such helical flow to expand and continue downwardly beneath the obstruction, then returning the suspension upwardly as a helically flowing core of the suspension confined within and by said downwardly flowing annular body of the suspension, whereby said particles are thrown by centrifugal force to, and carried down in the peripheral zones in the downwardly flowing suspension, withdrawing the desired suspension from the upper portion of such core, maintaining a sufficient difference in pressure in the suspension as introducing into and withdrawn from said helical flows whereby at leats some positive pressure is applied to the suspension in the region beneath said flows, and causing said particles to be further drawn by a downwardly and slowly moving stream including a small portion of the suspension from said region, said stream being conducted through a constricted path to a settling chamber, and maintaining said stream by withdrawing a small portion of the suspension from a point above the settlings in such settling chamber, independently of said upwardly returned suspension.

## Paper Manufacture

Patent No. 2,314,797. Donald F. Morris and Leonard R. Growden, Chillicothe, Ohio, assignors to The Mead Corporation, Chillicothe, Ohio, a corporation of Ohio. Application November 19, 1937. Serial No. 175,366. 5 Claims. (Cl. 117—68). 2. The process in the forming of paper for use in printing, and the like, and adapted to have substantially reduced curling tendencies due to the stabilization of forces created within the sheet by unequal treatment of the two sides thereof, which comprises applying a surface coating to one side only of the formed sheet, drying the coated sheet, said dried coated sheet having a tendency to curl toward the coated side resulting from forces set up within the sheet, calendering

*(Continued on page 1454)*

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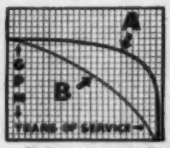


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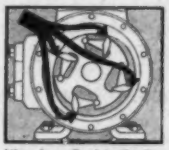

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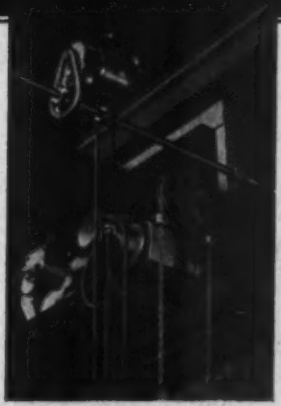

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**WRITE FOR BULLETIN 11**

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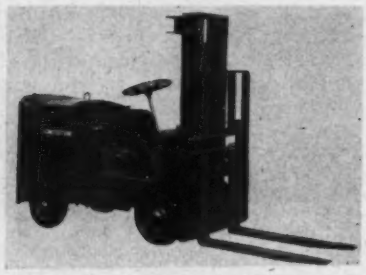
# NEW EQUIPMENT AND SUPPLIES

## Lift Truck Backrest Extension

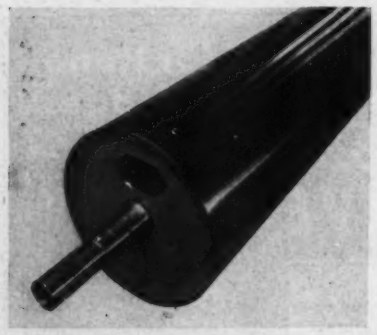
Towmotor Corporation, 1226 E. 152nd St., Cleveland, Ohio, has developed a carriage backrest extension for lift trucks. Of all-steel, all-welded construction, the extension is attached by inserting permanently at-



tached pins into sockets welded to the standard lifting carriage. The model illustrated extends 60 in. above the surface of the lifting forks. Other models, increasing carriage backrest height from 48 in. to 72 in. above forks, are available to meet individual requirements.

## Steel-Tube Cooling Roll

A steel-tube cooling roll has been announced by Rodney Hunt Machine Co., Orange, Mass. The roll illustrated is about

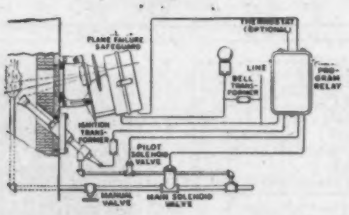


12 inches in diameter. It has a hard smooth surface and hollow shafts. The bore of the shaft at each end is threaded to take pipe fittings. The hollow shafts allow for the passage of cold water through the roll.

## Photoelectric Flame Failure Safeguard

FIREYE Type F28C, a photoelectric system for providing instantaneous fuel cut-off in any pressure-fed burner in the event of flame failure, has been announced by Combustion Control Corporation, 77 Broadway, Cambridge 42, Mass. Capable of monitoring flame of any intensity, the system is applicable to oil, gas or pulveried coal burners. It is used with manually ignited burners to cut off fuel and sound an alarm; or, when the burner is automatically fired, with Program Relay Type R25, to program fuel pump and valve operation, intermittent ignition system, purging period, and recycling.

Designed to operate at relatively high ambient temperatures, Type F28C is mounted directly on the furnace wall and watches the flame through a window in the wall of the fire chamber. Light from the flame strikes the sensitive plate of the photocell and starts a flow of electrons, producing a minute electrical current. After passing through a vacuum tube, this current is amplified sufficiently to operate a relay which directly controls a solenoid valve governing fuel feed, or Program Relay Type R25, which programs the entire cycle




of burner operation. While the electric eye sees flame, FIREYE feeds fuel to the burner. Should flame fail, or any condition impairing safe operation develop within the electronic control, FIREYE cuts off the fuel supply until proper combustion conditions are restored.

## Electric Tachometer

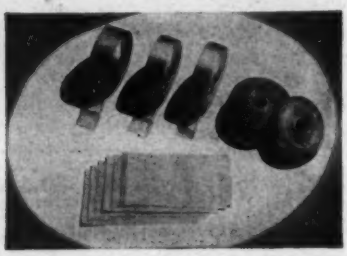
A self-energized tachometer that can be used either as a hand type or separable type has been announced by the Ideal Commutator Dresser Company, 4162 Park Ave., Sycamore, Ill. The unit consists essentially of a small generator and an

electric meter. When used as a hand type tachometer, the generator and meter are coupled together by a bayonet lock. When used as a separable type, the generator and meter are separated and connected only by a two conductor electric cord. A five-foot cord complete with coupling plug is provided, but a cord (of proper wire size) up to several hundred feet long can be used without introducing an appreciable error in scale reading. The size of complete unit is 3 in. by 7½ in. by 2½ in.

The unit is available in two sizes—from 0 to 2,500 rpm, and from 0 to 5,000 rpm.

## Dielectric Material for Capacitors

General Electric Company, Schenectady, N. Y., has announced a new synthetic dielectric material for capacitors. Developed after several years of laboratory research, the new product, designated as

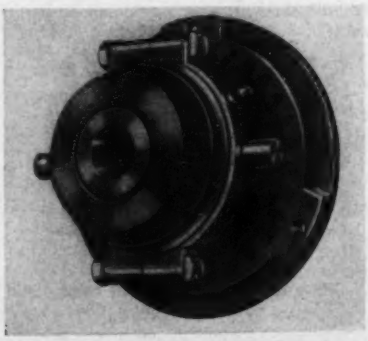


*Lectrofilm*, according to the announcement, has a greater combination of desirable properties than was previously available in any one dielectric material.

The product is available in both rolls and sheets for use by manufacturers making capacitors for the armed forces.

## Friction Clutch

Dodge Manufacturing Corporation, Mishawaka, Indiana, has announced a disc clutch for use on light machinery and equipment. Made in two sizes—½ hp. at 100 rpm and 1 hp. at 100 rpm—the clutch



may be provided with a gear tooth friction disc and drive ring or with bolted friction disc, either type suitable for operation under dry conditions. If required to operate in oil, the asbestos fibre friction discs may be replaced with a number of thin metal discs.

In operation a number of highly polished hardened steel balls are forced into a Vee-

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shaped groove by a hardened steel cam. Forcing the balls toward the center of the shaft widens the Vee-shaped groove, and produces pressure on the friction surface.

The clutch has no exposed operating parts. Smoothly finished die castings are used for both the slip ring and drive ring.

## Porcelain Clad Capacitor

Westinghouse Electric and Manufacturing Co., East Pittsburgh, Pa., has announced a new solder-sealed porcelain-clad type FPC Inerteen capacitor for high voltage d-c. applications (from 7,500 volts up to and including 200,000 volts) where space is limited. The capacitor elements are hermetically sealed in a tubular, wet-

process porcelain body with solder sealed end closures. The end closures act as the capacitor terminal by connecting the element leads at opposite ends, utilizing the porcelain tube as insulation.

Larger types are furnished with or without cast mounting flanges. Where castings are used, the capacitors are solder-sealed, then castings are cemented on with mineral lead compound.

## New Gas Mask

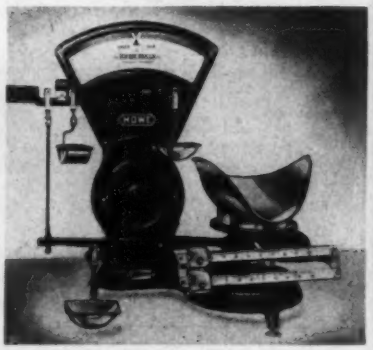
A gas mask, the *Protexall*, has been announced by American-La France-Foamite Corporation, Elmira, N. Y. Among the

features of the mask are: Specially molded rubber facepiece, large contoured lenses of shatterproof safety glass (detachable), comfortable and adjustable head harness, and exhalation valve of simple design. In addition, a non-collapsible, rugged, yet light and flexible corrugated tube allows free head movement. Canister gives approximately two hours' service. One revolution of dial hand means new canister needed. Each mask is supplied with a spare canister.

The mask has the approval of the U. S. Bureau of Mines for respiratory protection against acid gases, organic vapors, ammonia, carbon monoxide and toxic smokes where there is sufficient oxygen present to support life.

## Three-Pan Counting Scale

The Howe Scale Company, Rutland, Vermont, has announced a new three-pan counting scale (Type 1133-C) for the quick, accurate counting and weighing of materials in shipping, receiving and production departments as well as for inventory and similar counts of small parts. Of pendulum-




type construction, the scale has a total counting capacity of 40 lb. and a total weighing capacity provided by two beams of 20 lb. A target type, flush indicator, is claimed to eliminate parallax and provide easy "over and under" determination. The platform, measuring 8¾ in. in diameter, is beaded to hold a scoop 19½ in. by 10 in. by 6 in. The overall height and length of the scale is 27 in.; the overall width, 15 in.

## New Design of Sheave

Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin, has announced a sheave which has been designed for quick

and easy mounting and demounting. As its tapered split bushing, which accommodates normal shaft tolerances, is drawn further into sheave, sheave, bushing, and shaft are locked together simultaneously. The sheave is known as the *Magic Grip*.

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# TECHNICAL DEVELOPMENTS

**These abstracts are of the latest developments found in the American and foreign press.**

## Gases Evolved on Thermal Decomposition of Paper

The rate of evolution of gases is shown in a series of curves, which indicate that the thermal decomposition of paper is a function of time and that the rate is dependent on temperature. The latter is in approximate agreement with the Arrhenius formula for reaction velocities. The gases evolved are water vapor, which predominates, and carbon dioxide and carbon monoxide. The predominance of water vapor has a bearing on the drying of paper. Water vapor arising from thermal decomposition cannot be directly distinguished from that arising from sorbed water. It is suggested, however, that carbon dioxide and carbon monoxide might provide a means of recognizing an end-point in the drying operation. When the ratios of the three components becomes approximately constant, the paper may be considered as dry as is possible at the prevailing temperature without altering its composition. Curves also show the degree of correlation between the temperature dependence of the aging process (as expressed in changes of folding resistance and tensile strength) and the temperature dependence of the rate of gas evolution. Provided the amount of gas evolved is taken as a measure of the amount of thermal decomposition that has taken place in the paper, the degree of thermal decomposition can be put on the same basis as the degree of dryness in studying the properties of nearly dry paper. E. J. Murphy. Trans. Electrochemical Society 83, 12p. Preprint; through C. A. 37, 4570 (1943).

## Composition of Beech Bark

When beech bark is hydrolyzed with acids, much remains insoluble, and this portion contains lignin or lignin-like materials. The following results were obtained when the usual methods for lignin determination were used, the methoxyl contents in every case being given in parenthesis: 72% sulphuric acid method, 30-32.5% lignin (13%); Hägglund's method, 28-30% (13.2%); Noll's method, 32.3-34% (12%); Willstätter's hydrochloric acid method, 36.1-37.1% (10.7%); Freudenberg's cuprammonium hydroxide method, 18% (15.5%). The last-named procedure, while giving much lower results, furnishes a material having much higher methoxyl values.

The nature of the lignin fraction was studied by subjecting the alcohol-extracted bark to oxidation with phenyl nitrite, in the presence of alkali, under pressure. Thus 3 grams of crude vanillin were obtained from 56 grams of bark. Willstätter lignin from bark yielded approximately 10% lignin. Based on the original bark, this amounts to 2.8%. Cuproxam lignin yielded 16.7% lignin or 2.5% based on the original bark. The international method of tannin determination gave about 3.2% tannin which is in good agreement with values found previously. By exhaustive extraction of the bark with water to remove the tannins, a 9.1% extract was obtained, which contained 6.65% methoxyl. From 37 grams of this, a phenyl nitrite oxidation yielded 2 grams of crude vanillin, which represents only 0.5% based on the original bark. On hydrolysis, the extract gave 58% phlobaphenes (which contained 10.4% methoxyl) and 33% carbohydrate material. The phlobaphene fraction yielded very little vanillin.

The data indicate rather clearly that the bark in its non-hydrolyzable portion contains either lignin, or some material resembling it very closely. E. Clotofski and W. Junge. Ber. 74, No. 8, 1415 (1941) through C. A. 36, 5500 (1942).

## Hydrocellulose

A study was made of the properties of cotton cellulose under prolonged action of acids, and over a relatively wide range. The cellulose was treated with acids under

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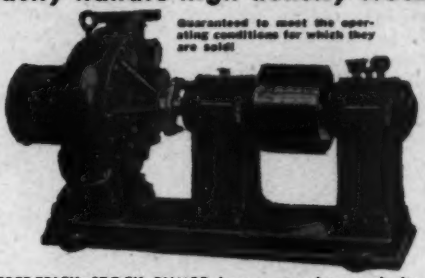
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various conditions, and the properties of the resulting hydrocelluloses were systematically studied. When cellulose is treated with sulphuric or hydrochloric acid there is an initial progressive change in properties. Finally a stage is reached at which there is little further obvious change in properties. When this is reached only a small proportion of the glucosidic linkages in the cellulose has been ruptured. Determination in weight loss indicated that when properties of the hydrocellulose appear practically unchanged hydrolysis does not stop but proceeds very slowly.

These observations are explained in terms of the accessibility of the glucosidic linkages to acid in a material like cellulose which is partly crystalline and partly amorphous. Mercerized cellulose hydrolyzes more rapidly than does the original material, which is accounted for by an increase in the amorphous phase of the cellulose. It is evident that the hydrolysis is heterogeneous and that in many ways it parallels the chromic acid oxidation of cellulose with the dilute oxidant. G. F. Davidson. J. Textile Inst. 34, T87-96 (1943).

## Lignin Plastics in Italy

The report is a review of the work of Sorgato and Menighini in Padua and deals with the utilization of technical lignin obtained as a by-product in pulping and from wood saccharification. In all cases the chemical processes reduce the natural plastic properties inherent in the native lignin, and this is especially true in the case of lignin obtained on wood saccharification. The lignin from the alkaline pulping processes is less affected and the most suitable plastic was found in the case of the lignosulphonates from the sulphite process.

The studies sought to overcome these changes in lignin plasticity and to utilize as completely as possible the properties of the lignin in the form of a synthetic resin molding powder or as an adhesive in fiberboard manufacture. A thermoplastic resin could be obtained from a mixture containing lignin, formaldehyde, carbohydrates, and phenol, the latter being present up to about 35 per cent. When certain catalysts were also used, the phenol content could be lowered to 8 per cent. The nature of these catalysts is not disclosed, and there is a patent pending. However, the molding powder has properties that compare favorably with those containing higher percentages of phenol. The claim is also made that a lignin resin formed without any phenol addition may be used satisfactorily as impregnating agent for single layer boards and in adhesives for laminated boards.

When impregnation is used, the finished board is either impregnated with a solution of the resin, or the resin is added to the fibrous suspension and precipitated on the fibers with acid. In the case of lamination, the resin is applied as a varnish and the plies of board are kept under a pressure of 200 atmospheres for 30 minutes, thus causing cohesion. Evidently the methods are past the laboratory stage and may be applied technically. Anon. Svensk Papperstidn. 46, 396-7 (1943) [in Swedish]; through B.I.P.C. 14, 149, 1944.

## Greaseproofness of Paper

Some of the existing procedures for determining greaseproofness have been modified in an attempt to formulate a reliable and reproducible method. The authors describe and illustrate their apparatus. Essentially it is a container holding a mixture that has approximately the same viscosity as the oily components of lard, and which is stable on long storage. This mixture consists of 1 part of diethyl phthalate, and 3 parts of dimethylglycol phthalate, dyed with 0.3 per cent Sudan III.

The paper to be tested is stretched over the opening of the container, and over the test sheet is placed an absorbent paper, the weight of which is known. Both sheets are clamped firmly into position, and the container is turned upside down so that the oily mixture contacts the test sheet under a definite adjustable pressure, at a definite temperature. The amount of the mixture that penetrates is sorbed by the outer sheet after a specific time period, and the absorbent paper is again weighed. The penetration is recorded in milligrams. This value is a measure of greaseproofness. The same test oil should not be used over too protracted a time period, because the alum content of the paper evidently influences its properties.

Repeated tests on standard papers indicate that the test is reproducible and that it may be applied satisfactorily. Tore H. Nilsson and Jon Bergwall. Svensk Papperstidn. 46, 441-9 (1943); through B.I.P.C. 14, 147 (1944). [The original is in Swedish with summaries in German and English.]

## Papermaking Patents

*(Continued from page 1448)*

the sheet, subjecting the calendered sheet to a wet pressing operation to effect uniform incorporation of added moisture in the amount of approximately 1.5% to 2.0% into the sheet upon the uncoated side thereof, the added moisture being effective to stabilize the forces within the sheet and substantially reduced the curling tendencies caused by the forces initially present within the sheet, and lightly recalendering the sheet with the added moisture therein.

### Drive Mechanism for Papermaking Machines

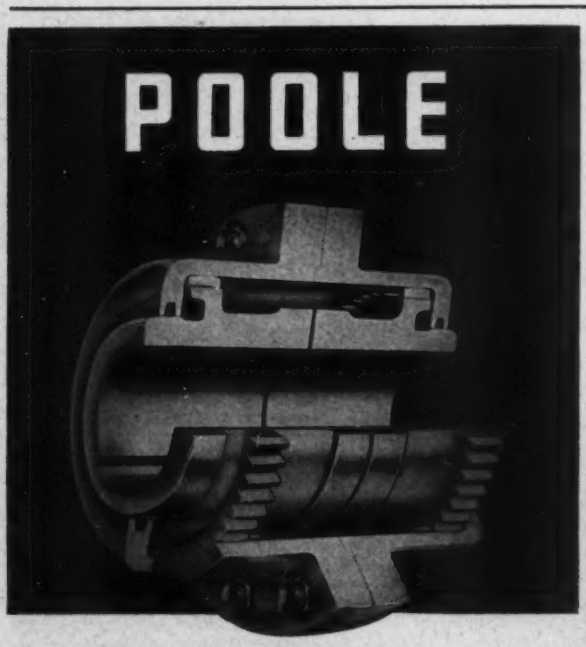
Patent No. 2,307,746. Bernard A. Malkin, Lachine, Quebec, Canada, assignor to Dominion Engineering Works, Limited, Lachine, Quebec, Canada. Application May 26, 1941. Serial No. 395,185. 6 Claims. (Cl. 74—405). A driving unit of the character described comprising a gear casing, anti-friction bearing housings mounted in aligned openings provided in opposite walls of said casing, a pulley shaft extending through both of said bearing housings and having a substantial portion of its length projecting beyond one side of said casing, anti-friction bearings interposed between the circumferential walls of said bearing housings and the portions of the shaft passing therethrough, a tube surrounding a portion of the shaft located outside said casing, a pair of bearing housings through which said tube extends, anti-friction bearings arranged between the circumferential walls of the last mentioned bearing housings and the portions of the tube passing therethrough, said bearings serving to support said tube in concentric spaced relation to the portion of the shaft passing therethrough, one of said last mentioned bearing housings being supported independently of said casing and the other being attached to and supported by one of the first mentioned bearing housings, a pulley fixed to said tube, a second shaft extending through said casing and geared to said pulley shaft and means for releasably clutching said tube to said pulley shaft, said last mentioned means comprising co-acting clutch members carried, respectively, by the end of the tube remote from said casing and by an adjacent portion of the pulley shaft.

### Reciprocating Shower

Patent No. 2,300,909. Arthur E. Broughton, Glens Falls, N. Y. Original application April 14, 1939. Serial No. 267,772. Divided and this application January 29, 1940. Serial No. 316,132. 3 Claims. (Cl. 299—55). A shower for paper making machines and the like comprising a supporting bracket, a rigid water supply pipe carried by said bracket and projecting inwardly therefrom, means for supplying water to said supply pipe, a sleeve forming a spray head surrounding a portion of said supply pipe and slidable thereon, packing between the ends of said sleeve and said supply pipe, spray nozzles carried by said sleeve, said supply pipe having an opening therein located between the packing at the two ends of said sleeve for supplying water to said sleeve, a supporting member attached to said bracket and running inwardly therefrom and connected to the inner end of said supply pipe, a connecting rod attached to said sleeve and means carried by said bracket for imparting a reciprocating movement to said connecting rod, said bracket forming the sole support for all other parts of the shower.

### Process of Manufacturing Paper and Board

Patent No. 2,315,892. Levis M. Booth, deceased, late of Plainfield, N. J., by Alice Lippincott Booth, executrix, Plainfield, N. J. Application April 6, 1939. Serial No. 266,382. 14 Claims. (Cl. 92—21). 14. The method of making paper board containing at least three inner filler plies on a multi-cylinder machine utilizing one given main filler stock stream, to eliminate the tendency to channeling caused by drainage of water from the inner filler plies to the outer plies, which comprises, dividing said main filler stock stream into a plurality of divisional filler ply streams adding to said divisional streams respectively different quantities of a first reagent, adding to said divisional streams respectively substantially reacting quantities of a second reagent, said reagents each being selected from groups of chemicals which mutually react to form a precipitate of a gelatinous characteristic which is insoluble and which decreases the water drainage rate from said filler stock, forming a central filler ply from said divisional filler stock stream having a relatively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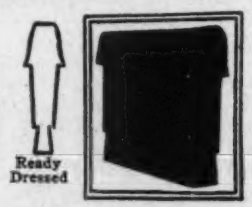
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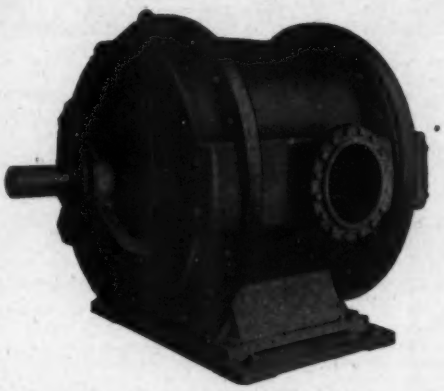

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high content of said reagents and forming filler plies outside the central filler ply from respective divisional stock streams whose content of said reagents decreases with the number of plies a given intermediate ply outside said central ply is spaced from the central filler ply and then consolidating said plies into a single sheet of board with said central filler ply in the center thereof and said outer filler plies arranged outwardly therefrom.

## Papermaking

Patent No. 2,312,310. Donald B. Bradner and George C. Munro, Hamilton, Ohio, assignors to The Champion Paper and Fibre Company, Hamilton, Ohio, a corporation of Ohio. Application March 1, 1939, Serial No. 259,154. 6 Claims. (Cl. 92—75). 1. Apparatus for producing paper having substantially uniform gloss which comprises in combination a calender, means including a motor for varying the gloss producing capacity of said celander, means including a photoelectric cell for detecting deviations from a predetermined value of the gloss on the paper as it passes from the calender, and an automatic electric relay circuit controller electrically connected to said photoelectric cell and to said motor to operate said motor in response to variations in the output of said photoelectric cell to increase the gloss producing capacity of the calender when the gloss on the paper falls below said predetermined value and to decerase the gloss producing capacity of the calender when the gloss on the paper exceeds said predetermined value.

## Papermaking Machine Deckle

Patent No. 2,305,300. John C. Lowe, Quakertown, Pa., assignor to Lowe Deckle Mfg. Corporation, Perkasie, Pa. Application April 24, 1939. Serial No. 269,771. 4 Claims. (Cl. 92—43). In a deckle for paper making machines including a paper making cylinder, means for spraying a liquid against the cylinder to remove stock at the side margin of the sheet of paper formed on the cylinder, a pivotally mounted gage support, a gage rotatably mounted on the support for working against the cylinder to define the edge of the sheet, and spring means engaging the support for urging the gage into cylinder contacting position.

## Shrinkproof Paper and Method of Manufacture, and Laminated Product

Patent No. 2,315,128. Francis F. Newkirk, Attleboro, Mass., assignor to American Reenforced Paper Company, Attleboro, Mass., a corporation of Massachusetts. Application November 27, 1939. Serial No. 306,304. 18 Claims. (Cl. 154—50). 4. A sheet of kraft paper impregnated with the product of the reaction within its structure of formaldehyde and an amount of urea which is by weight less than approximately one-half and more than approximately one-fourth that of the formaldehyde, the said paper being at least 0.5% and no more than 10% heavier than the same paper without said impregnation and being capable of a shrinkage of not more than 1% in its cross direction when alternately wetted and dried seven times.

5. A composite reenforced sheet of paper composed of two superposed sheets of the paper defined in claim 4 united by interposed asphalt in which reenforcing strands are embedded, said composite sheet having a very inhibited capacity to shrink when repeatedly wetted and dried.

## Apparatus for Determining the Tendency of Paper to Curl

Patent No. 2,316,378. George S. Witham, Jr., Hudson Falls, N. Y., assignor to W. & L. E. Gurley, Troy, N. Y., a corporation of New York. Application October 23, 1940. Serial No. 362,396. 10 Claims. (Cl. 73—51). 1. In a device for determining the curling properties of paper and the like, means forming an enclosure provided therewithin with means adapted freely to support thereon a sample sheet of paper in substantially horizontal, flat condition and means for providing and maintaining within said enclosure-forming means heat of substantially a standard temperature, said enclosure-forming means being provided in a side thereof with a translucent target provided with a scale for measuring the flatness of said sample sheet and means for casting light rays upon said target; said paper-supporting means being arranged to support said paper in the path of said light rays whereby the shadow of said paper will appear on said target.

# New Catalogues and Publications

**Allis Chalmers Mfg. Co.,** Milwaukee, Wis.—A unit-sub slide rule offers a simplified way of determining the correct size air circuit breakers for all industrial substation applications, and makes possible the calculation of the interrupting capacity of the 600-volt class air circuit breakers needed for control of power in all industrial plants. Constructed from Standard AIEE formulae for determining short circuit current, the unit-sub rule takes into consideration all necessary factors, such as motor load and d-c. components. While the slide rule has been specially developed for use in load-center unit substation applications, it can be used to check breakers on any system. It applies to direct connected as well as cascaded breakers. Available on request. (The same information also is available in Nomogram form: bulletin B-6285).

**American Brake Shoe Company,** Chicago Heights, Ill.—A recent issue of American Manganese Steel Division is a 24-page bulletin descriptive of the metallurgical properties of manganese steel. One section is devoted to reducing maintenance on aerial tramway rollers and cable, another deals with logging blocks and nigger bars. The use of steel chains in paper mill debarking drums is of interest to the pulp and paper industry, and the entire bulletin is profusely illustrated in two colors. Request Bulletin 144-L.

**American Photocopy Equipment Company,** 2849 North Clark St., Chicago—The A-PE-CO "Photo Exact" used in producing duplicates of all printed and written material, blueprints, photographs, charts, etc., is described in a short folder. Its use in various fields, operating instructions and prices are outlined.

**Cochrane Corporation,** 17th and Allegheny Ave., Philadelphia 22, Pa.—A reprint of "Improvements in the Hot Process Water Softeners," which originally appeared in the October, 1943, issue of *Iron and Steel Engineer,* is reproduced in a seven-page bulletin just issued. This outline covers a brief history of the development of this versatile and popular method of feed water conditioning. Illustrations show the possibility of silica removal, reduction of organic matter, and typical installations showing many adaptatons of the equipment. Reprint No. 30 on request.

**Duo-Safety Ladder Corp.,** 811 Ninth St., Oshkosh, Wis.—This company has issued several circulars on ladders. One describes the "Series G" folding ladder and outlines specifications, weight, length open and closed and a partial list of its uses. Advantages of the Duo safety ladder for overhead work are handled in another circular, together with type, sizes and specifications. A complete price list also is included. Copies gratis.

**Electric Machinery Mfg. Co.,** Minneapolis 13, Minn.—A colorful 4-page folder on motor construction and engineering design is available. Synchronous motor control is discussed, with illustrations. Request publication No. 173.

**Industrial Truck Statistical Ass'n.,** 208 S. La Salle Chicago 4, Ill.—A profusely illustrated bulletin contains informaton and ideas on materials handling, and describes the application of the unit load principle to shipping, receiving and warehousing operations. The latter part is devoted to case studies showing savings actually effected in the handling and packing of diversified types of products. Copies on request.

**Jewell Belt Hook Company,** Naugatuck, Conn.—A small catalogue contains an easy reference regarding the number of belt hooks required for different width belts of varying thicknesses. Complete price schedule also is included, and instructions for use of hooks. Copies gratis.

**Link-Belt Company,** 307 N. Michigan Ave., Chicago—A 20-page book containing a series of tables used in calculating center distances and chain lengths of chain drives operating over cut-tooth wheels, is available. The number of teeth in small sprocket wheel of the drive is given in the upper right hand corner on the right hand page of each spread of pages. The number of teeth in the large wheel appears at the top of each table. The body of table gives exact center distances for a chain of one-inch pitch and of the length listed in pitches in the first column. Center distance for any other pitch of chain may be obtained by multiplying the centers in table by the pitch. Copies available.

**Manning, Maxwell & Moore, Inc.,** Bridgeport 2, Conn.—The Ashcroft Gauge Division announces a new 12-page bulletin on the phenol turret case Duregauge. It illustrates in colors the assembly of the gauge, and full explanation in text is given of the rotary movement, the design and construction of the system, general dimensional drawings, and illustrations of all 31 dials available. Request copies.

**George S. May Business Foundation,** 111 S. Dearborn, Chicago—Report No. 145 (reprinted by permission of *Modern Plastics*) is a comprehensive study in cost finding within the plastics industry. Various indirect costs enter into the final production expenses and the booklet demonstrates by the use of charts how these can be tracked down. Report No. 146 (reprinted by permission of *Industry and Power*) is a discussion of the causes and results of low power factor, provid-

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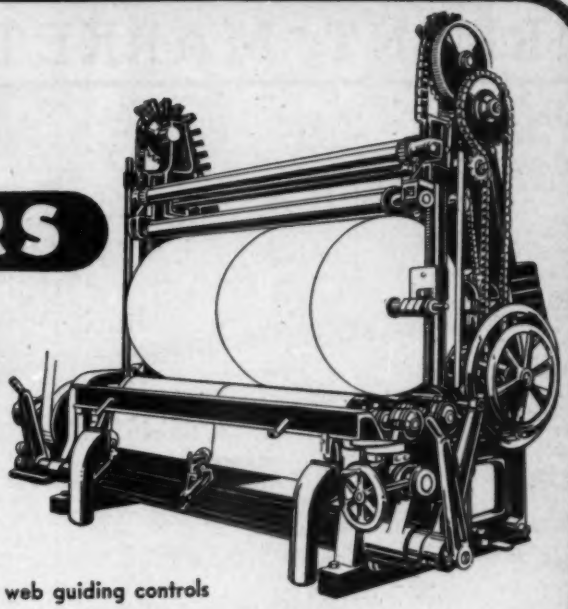

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ing time-saving methods of calculation and correction through the use of a unique automatic correction finder. Bulletin No. 11 lists foundation reports, including four of recent issue, available without charge. Request bulletins.

**Metallizing Co. of America,** 1330 W. Congress St., Chicago.—A one-page bulletin on Mogul Flux contains shop information on the saving of time, money and labor. Directions on application, prices and general information are outlines. Request Bulletin 17.

**Northern Equipment Co.,** Erie, Pa.—The sixth edition of "Mechanical Feed Water Regulation for Boilers," by Professor E. P. Culver now is available. The booklet covers the principles of boiler feed water control and describes the mechanical equipment available to meet various operating conditions. Differential pressure control and feed pump control are discussed. It contains numerous illustrations diagrams and chart reproductions. Now available.

**W. S. Rockwell Company,** 50 Church St., New York—Catalogue No. 406 contains 24 pages of descriptive material relating to the Rockwell valves for control of air, gas and liquids. It covers sizes and dimensions of different type valves, and their application under varying industrial conditions. Sizes and dimensions are clearly charted, and the entire catalogue is carefully illustrated. Copies gratis.

## Books

**Applied Safety Engineering**—Co-authored by H. H. Berman, safety engineer, Consolidated Gas Electric Light and Power Company of Baltimore, and Instructor in Safety Engineering, University of Maryland, and H. W. McCrone, field engineer, Baltimore Safety Council, and instructor in safety engineering, University of Maryland, this book deals with accidents and near-accidents as cases. It is a volume of 189 pages which emphasizes the "how" of safety engineering. The practicality of the work is indicated by the chapter headings: Basic Considerations, Getting Down to Cases, How to Make Investigations, Investigation Reports on the Cases, How to Write Safety Rules and Regulations, Pattern Safety Rules and Regulations, How to Write Safety Messages, Safety Messages on Cases, How to Hold Safety Conferences, Safety Conferences on Cases, How to Make a Safety Talk and How to Make a Safety Inspection. Priced at $2.00 a copy, the publisher is the McGraw-Hill Book Co., Inc., 330 West 42nd Street, New York 18, N. Y.

**A.S.T.M. Standards on Paper and Paper Products**—A 144-page publication with paper cover, this book presents the various American Society for Testing Materials standard and tentative standard methods of test and specifications pertaining to paper and paper products.

Most of the book is devoted to 31 testing procedures which cover such methods as are used for determining the degree of staining of paper by alkali, ash content of paper and paper products, casein in paper, grease resistance of paper, paraffin content of waxed paper, pentosans in paper, resin in paper, starch in paper, surface wettability of paper, tearing resistance of paper, wire and felt sides of paper, etc.

Of the six specifications included, three are used for electrical insulation, one is for waterproof paper for curing concrete, and two pertain to quick lime for paper manufacture.

Prepared by A.S.T.M. Committee D-6 (which in much of its work has cooperated closely with TAPPI), the book can be obtained from the American Society for Testing Materials, 260 S. Broad Street, Philadelphia 2, Pa., the publisher, for $1.35 per copy.

**Employee Evaluation Manual for Interviewers**—A paper-covered publication, spirally-bound, this manual is the work of Richard A. Fear, Associate Director of Industrial Division of The Psychological Corporation and Lecturer at Columbia University, and Byron Jordan, Assistant to the Personnel Director, Ranger Aircraft Engines Division of Fairchild Engine and Airplane Corporation. The manual is divided into three parts: (1) Nature and Purpose of the Employee Evaluation Form; (2) How to Use the Employee Evaluation Form; and (3) Interpretation of Items on Evaluation Form. Three forms, completely filled out, are appended to the manual as examples. The publisher is The Psychological Corporation, 522 Fifth Avenue, New York, N. Y.; the price, $1.75 a copy.

**Wage and Hour Manual (1943 Edition)**—Published by The Bureau of National Affairs, Inc., Washington, D. C., this volume, totaling more than 700 pages, covers more than 1,000 rulings and interpretations relating to wages, salaries, and hours of work. The book is divided into four principal parts: Part I includes all changes made since March, 1942, in controls under the Fair Labor Standards Act. Parts II and III contain similar material under the Walsh-Healey Public Contracts Act and a group of miscellaneous federal statutes relating to wages and hours. Part IV contains the text of all statutory and regulatory material, as well as analytical articles on wage and salary stabilization, premium pay regulation, and the minimum wartime work week.

The book is supplementary to the 1942 edition in that it integrates the latest regulations and interpretations on wage-hour regulation with the basic documents and earlier regulations contained in the 1942 edition by means of back references.

At the end of the manual is a topical index to all the rulings, regulations, articles and interpretations. A finding list of regulations and statutes in both the 1942 and 1943 editions is also included. The price is $7.50 a copy.

# CURRENT MARKET QUOTATIONS

## RAGS (Domestic)

NEW RAGS

OPA ceiling prices in sales to consuming mills delivered buyer's usual receiving point, with brokers' allowance not in excess of 5 per cent.

| | per cwt. |
|---|---|
| Blue Overalls | -5.50 |
| Corduroy, Men's | -3.50 |
| Corduroy, Ladies' | -3.00 |
| Washables, No. 1 | -3.00 |
| Percales | -4.75 |
| New Soft Blacks | -3.75 |
| Light Prints, No. 1 | -4.50 |
| Khaki Cuttings— | |
| Bleachable | -4.25 |
| Unbleachable | -3.50 |
| New White Canvas | -6.50 |
| New Mixed Blacks | -3.25 |
| Canton Flannels, Bleached | -7.00 |
| Shirt Cuttings— | |
| New White No. 1 | -7.25 |
| No. 1 White Headings | -7.25 |
| White Shrunk | -5.00 |
| Silesias No. 1 | -5.75 |
| New Unbleached | -7.50 |
| Fancy | -3.50 |
| Linen Cuttings— | |
| American | -5.00 |
| White | -14.00 |
| Gray | -14.00 |

## RAGS (Domestic)

f. o. b. New York City

OLD RAGS

OPA ceiling prices in sales to consuming mills f. o. b. cars at points of shipment, with brokers' allowances of $1 to $2 a ton depending on the value of the grade involved.

| Roofing— | per ton |
|---|---|
| No. 1 | 31.00 |
| No. 2 | 29.00 |
| No. 3 and No. 4 | 27.00 |
| Twos and Blues— | |
| Repacked | 44.00 |
| Thirds and Blues— | |
| Repacked | 44.00 |
| Miscellaneous | 36.00 |
| Whites, No. 1— | |
| Repacked | 76.00 |
| Miscellaneous | 64.00 |
| Whites, No. 2— | |
| Repacked | 56.00 |
| Miscellaneous | 53.00 |

## RAGS (Foreign)

ex dock New York City

NEW RAGS — per cwt. — Nominal

New Dark Cuttings
New Mixed Cuttings
New Light Silesias
Light Flannelettes
Unbleached Cuttings
New White Cuttings
New Light Oxfords
New Light Prints

## RAGS (Foreign)

ex dock New York City

OLD RAGS — per cwt. — Nominal

No. 1 White Linens
No. 2 White Linens
No. 3 White Linens
No. 4 White Linens
No. 1 White Cottons
No. 2 White Cottons
No. 3 White Cottons
No. 4 White Cottons
Extra Light Prints
Ord. Light Prints
Med. Light Prints
Dutch Blue Cottons
French Blue Cottons
French Blue Linens
Checks and Blues
Linsey Garments
Dark Cottons
Old Shopperies

## ROPE and BAGGING

f. o. b. and ex dock New York City

| Gunny No. 1— | per cwt. |
|---|---|
| Foreign | Nominal |
| Domestic | 3.25 to 3.75 |
| Wool Tares— | per cwt. |
| Light | 3.50 to 3.75 |
| Heavy | 3.75 to 4.00 |
| No. 1 Scrap Bagging | 3.00 to 3.50 |
| Manila Rope— | |
| No. 1 large | -*115.00 |
| No. 1 small | -*105.00 |
| Sisal Rope— | |
| No. 1 large | -*95.00 |
| No. 1 small | -*80.00 |
| New Burlap Cuttings | 5.25 to 5.75 |
| Jute Threads— | |
| Foreign (Nom.) | 6.25 to 6.75 |
| Domestic | 5.50 to 6.00 |
| Strings— | |
| No. 1 sisal | -*80.00 |
| No. 2 sisal | -*60.00 |
| Soft jute | 5.00 to 5.50 |
| Mixed | 1.50 to 1.75 |

*OPA ceiling price per ton f. o. b. shipping point.

## WASTE PAPER

OPA ceiling prices f. o. b. points of shipment, with brokers' allowances of 4 to 9 per cent.

| Shavings— | per ton |
|---|---|
| White Env. Cuts, One-Cut | 67.50- |
| Hard White Env. Cuts | 62.50- |
| Hard White, No. 1 | 57.50- |
| Soft White, No. 1 | 50.00- |
| Soft White, One-Cut | 57.50- |
| Soft White, Misc. | 43.00- |
| Fly Leaf, No. 1 | 32.50- |
| Fly Leaf, Woody, No. 1 | 25.00- |
| No. 2 Mixed Col. Woody | 18.00- |
| Flat Stock— | |
| Repacked No. 1 Heavy Books and Magazines | 33.50- |
| Mixed Books | 17.00- |
| Ledger Stock— | |
| No. 1 White | 43.50- |
| No. 1 Mixed (Colored) | 37.50- |
| Manilas— | |
| New Env. Cuttings | 53.00- |
| New Env. Cuts, One-Cut | 57.50- |
| Extra Manilas | 37.00- |
| Manila Tab Cards, Free of Ground Wood | 45.00- |
| Ground Wood Manila Tab Cards | 27.00- |
| Kraft— | |
| Envelope Cuttings | 65.00- |
| Mixed Env. or Bag Cuts | 55.00- |
| Tripled Sorted No. 1 Brown | 50.00- |
| New 100% Cor. Cuts | 45.00- |
| No. 1 Old Assorted | 35.00- |
| News— | |
| White Blank | 33.00- |
| Overissue | 17.00- |
| No. 1 Baled | 15.00- |
| Old Corrugated Containers | 23.00 |
| New Corrugated Cuts | 18.00- |
| Mill Wrappers | 17.00- |
| Box Board Chips | 14.50- |
| No. 1 Mixed Paper | 14.00- |

## CHEMICALS

f. o. b. shipping point

| Alum (Papermakers)— | |
|---|---|
| Lump, cwt. | 4.25- |
| Ground, cwt. | 4.00- |
| Powdered, cwt. | 4.40- |
| Blanc Fixe— | |
| Pulp, bulk, ton | 40.00 to 46.50 |
| Dry, barrels, pound | 60.00 to - |
| Bleaching Powder— | |
| Drums, cwt. | 2.25 to 3.10 |
| Casein (Domestic Standard)— | |
| 20-30 mesh (bags), lb. | 24.00 to 24.75 |
| 80-100 mesh (bags), lb. | — |
| Argonine, lb. | 20.00— |
| China Clay— | |
| Domestic Filler | |
| Bulk (mine) ton | 7.50 to 15.00 |
| Domestic Coating | |
| Bulk (mine) ton | 11.00 to 22.00 |
| Imported (ship side) | |
| Bulk (lump) ton | 18.00 to 26.00 |
| Chlorine— | |
| Tank cars (wks) cwt. | 2.00 to 2.25 |
| Gelatine (silicin), lb. | .90 to .95 |
| Glyc. (C.P.) drums, lb. | 18.25 to 18.50 |
| Litharge, powd., bbl., lb. | .09 to - |
| Rosin (Gum)— | |
| New York, per 100 lbs. | |
| E | 4.98- |
| F | 5.05- |
| G | 5.13- |
| WW | 7.45- |
| Rosin (Wood), carlots | 3.64- |
| Salt Cake— | |
| Dom. bulk (wks) ton | 15.00 to 16.00 |
| Imp. bulks on dock— | |
| (Atl. ports) ton (Nom.) | 20.00 to |
| Soda Ash— | |
| Bulk (works), cwt. | .90 to .95 |
| Paper Bags, cwt. | 1.05 to 1.35 |
| Barrels, cwt. | 1.05 to 1.35 |
| Soda (Caustic)— | |
| Solid, drums, cwt. | 2.30 - |
| Ground and flake, drums, cwt. | 2.70 - |
| Sodium Silicate— | |
| 60 deg., 55 gal. drums, (works) cwt. | 1.65 to 2.05 |
| 40 deg., 35 gal. drums, (works) cwt. | .80 to 1.45 |
| Starch— | |
| Pearl, 140 lb. bags, cwt. | 3.10- |
| Pearl, barrels, cwt. | 3.20- |
| Paper (Sp.) bags, cwt. | 3.20- |
| barrels, cwt. | 3.30- |
| Sulphur (crude)— | |
| (mine) bulk, long ton | 16.00 to —— |
| Talc— | |
| Dom. 100 lb. bags (mine) ton | 16.00 to 21.00 |
| Imp. bulk, ton (Nom.) | — |
| Titanium Dioxide— | |
| Barium Pig., bbls., lb. | .05¾ to .06 |
| Calcium Pig., bbls., lb. | .05 to .05¼ |
| Zinc Sulphide, bbls., lb. | 5.60 to 5.85 |

## WOOD PULP

OPA maximum prices applicable to wood pulp delivered to consumer mills located East of the Continental Divide exclusive of Denver, Colo. (West of the Continental Divide and in Denver, Colo., ceilings are $6 per ton lower):

| | |
|---|---|
| Bleached softwood sulphite | 86.00 |
| Unbleached softwood sulphite | 74.00 |
| Bleached hardwood sulphite | 83.50 |
| Unbleached hardwood sulphite | 71.50 |
| Northern bleached sulphate | 86.00 |
| Southern bleached sulphate | 79.00 |
| Northern semi-bleached sulphate | 82.00 |
| Southern semi-bleached sulphate | 75.00 |
| Northern unbleached sulphate | 73.00 |
| Southern unbleached sulphate | 63.50 |
| Bleached soda | 72.00 |
| Unbleached soda | 68.00 |
| Ground wood pulp | 50.00 |
| Ground wood—paper machine dried and mutilated | 53.00 |
| Sulphite screenings | 43.50 |
| Sulphate screenings | 38.00 |
| Ground wood screenings | 32.00 |
| Northern unbleached sulphate sideruns | 73.00 |
| Southern unbleached sulphate sideruns | 63.50 |
| Standard news print sideruns | 50.00 |

## PAPER

f. o. b. New York City

| Boards— | per ton |
|---|---|
| Binders | 84.00- |
| Chip | 48.00- |
| Chip, tube and can | 50.00- |
| Chip, full-bending | 52.50- |
| Chip, sgl. mls. lined | 60.00- |
| Coated, white patent .016 | 80.00- |
| .020 and heavier | 75.00- |
| Kraft liner | 63.00- |
| News | 48.00- |

Book Papers—OPA base maximum prices per cwt. 4 cases or equivalent, f. o. b. mill with quantity, weight, manufacturing and other differentials allowed:

Uncoated (Untrimmed)

| Book, White (M. F.)— | |
|---|---|
| A Grade E. F. | 8.25 |
| B Grade E. F. | 7.80 |
| C Grade E. F. | 7.55 |
| D Grade E. F. | 7.30 |
| E Grade E. F. | 7.05 |
| No. 2 Uncoated Offset 4 sides. White | 8.45 |

Coated White (Trimmed 4 sides)

| | |
|---|---|
| No. 1 Glossy | 11.90 |
| No. 2 Glossy | 10.85 |
| No. 3 Glossy | 10.15 |
| No. 4 Glossy | 9.80 |
| No. 5 Glossy | 9.30 |
| C2S Offset | 10.40 |
| C1S Litho (Varnish) | 10.05 |
| C1S Litho (Non-Varnish) | 9.80 |

Writing Papers—OPA base maximum prices per cwt. on writing papers, f. o. b. mill with zone, quantity, packing and other differentials allowed:

| Rag Content Bond— | per cwt. 20 lb. | 16 lb. |
|---|---|---|
| Extra 100% Rag | 34.00 | 34.00 |
| 100% Rag | 28.00 | 28.00 |
| 75% Rag | 20.00 | 20.00 |
| 50% Rag | 16.00 | 17.25 |
| 25% Rag | 14.00 | 15.00 |

| Rag Content Ledger— | per cwt. Zone 1 |
|---|---|
| Extra 100% Rag | 35.00 |
| 100% Rag | 29.00 |
| 85% Rag | 26.00 |
| 75% Rag | 21.00 |
| 50% Rag | 17.00 |
| 25% Rag | 15.00 |

| Sulphite Bond— | per cwt. 20 lb. | 16 lb. |
|---|---|---|
| Air dry, watermarked | 12.75 | 13.70 |
| No. 1 (M. F.) watermarked | 9.00 | 9.70 |
| No. 2 (M. F.) watermarked | 8.25 | 8.85 |
| Plain (M. F.) unwatermarked | 7.50 | 8.20 |

| Sulphite Ledger— | per cwt. Zone 1 |
|---|---|
| No. 1 (M. F.) watermarked | 10.00 |
| No. 2 (M. F.) watermarked | 9.25 |
| Plain (M. F.) unwatermarked | 8.60 |

| Glassine (f. o. b. mill)— | per cwt. |
|---|---|
| Embossed (25 lb. up) | 13.75 to 14.25 |
| Bleached (25 lb. up) | 12.75 to 13.25 |
| Unbleach. (25 lb. up) | 11.50 to 12.00 |
| Greaseproof— | |
| Bleach. (25 lb. up) | 11.00 to 11.50 |
| Unbleach. (25 lb. up) | 10.00 to 10.50 |

| News—OPA Ceilings | per ton |
|---|---|
| Rolls (Contract) | 58.00 |
| Rolls (Spot) | (nominal) |
| Sheets | 66.00 |

| Tissues (Carlots)— | per ream |
|---|---|
| White, No. 1 | 1.12½ to 1.20 |
| White, No. 2 | 1.00- |
| Bleached Anti-Tarnish | 1.15- |
| Colored | — |
| Anti-Tarnish Kraft | .70- |
| Manila | .90 to .95 |
| Napkins, semi-crepe (12½ lb. to M shts.) per cs. | .60- |
| Napkins, full crepe and emb'ssed (12½ lb. to M shts.) per cs. | .60- |
| Toilet, Bleached (M shts.) per cs. | 5.65- |
| Toilet, Unbleached (M shts.) per cs. | 4.25- |

| Towels— | per case |
|---|---|
| Bleached | 3.20 to 3.75 |
| Unbleached | 2.60 to 3.05 |

| Wrappings (Kraft)— | per cwt. |
|---|---|
| Super-Standard | 5.25 to 7.65 |
| No. 1 Wrapping | 5.00 to 7.40 |
| Standard Wrapping | 4.75 to 7.15 |
| Standard Bag | 4.37½- |

Wrappings (Sulphite and Bleached Kraft)—
(Rolls, f. o. b. mill)

| Bleached papers— | per cwt. |
|---|---|
| M.F. & M.G. Waxing, 20 lb. (Carloads only) | 7.25 to 7.50 |
| (10,000 lbs.) | 7.50 to 7.75 |
| Drug wrapp. 35 lb. | 7.00 to 7.25 |
| Unbleached Papers— | |
| Com. Grd. Butch. 40 lb. | 5.50 to 5.75 |
| No. 1 Butchers | 5.75 to 6.00 |
| No. 1 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb. | 6.25 to 6.50 |
| No. 2 Imit. Parch & Dry Fin. Groc. Sulphite 30 lb. | 6.00 to 6.25 |
| Steam Finish, 50 lb. | 5.00 to 5.25 |
| Water Finish, 40 lb. | 5.50 to 5.75 |

| Manilas— | |
|---|---|
| Envp. Mla., Sub. 16-40 (No. 1) | 6.00 to 6.50 |
| Envp. Mla., Sub. 16-28 (No. 2) | 5.75 to 6.00 |
| Envp. Mla. (Prices based on large sheets untrim'd remarked, in bdls.) | |
| Wrapp. Mla. 35 lb. up— | |
| No. 1 | 6.00 to 6.25 |
| No. 2 | 5.75 to 6.00 |
| M. G. Sulphite and Kraft (other than Waxing) | |
| Grade A-22 lb. | 7.20 to 7.40 |
| Grade B-20 lb. | 6.75 to 7.00 |

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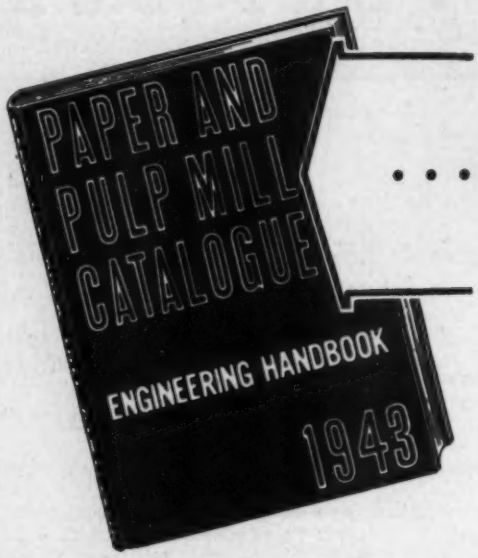


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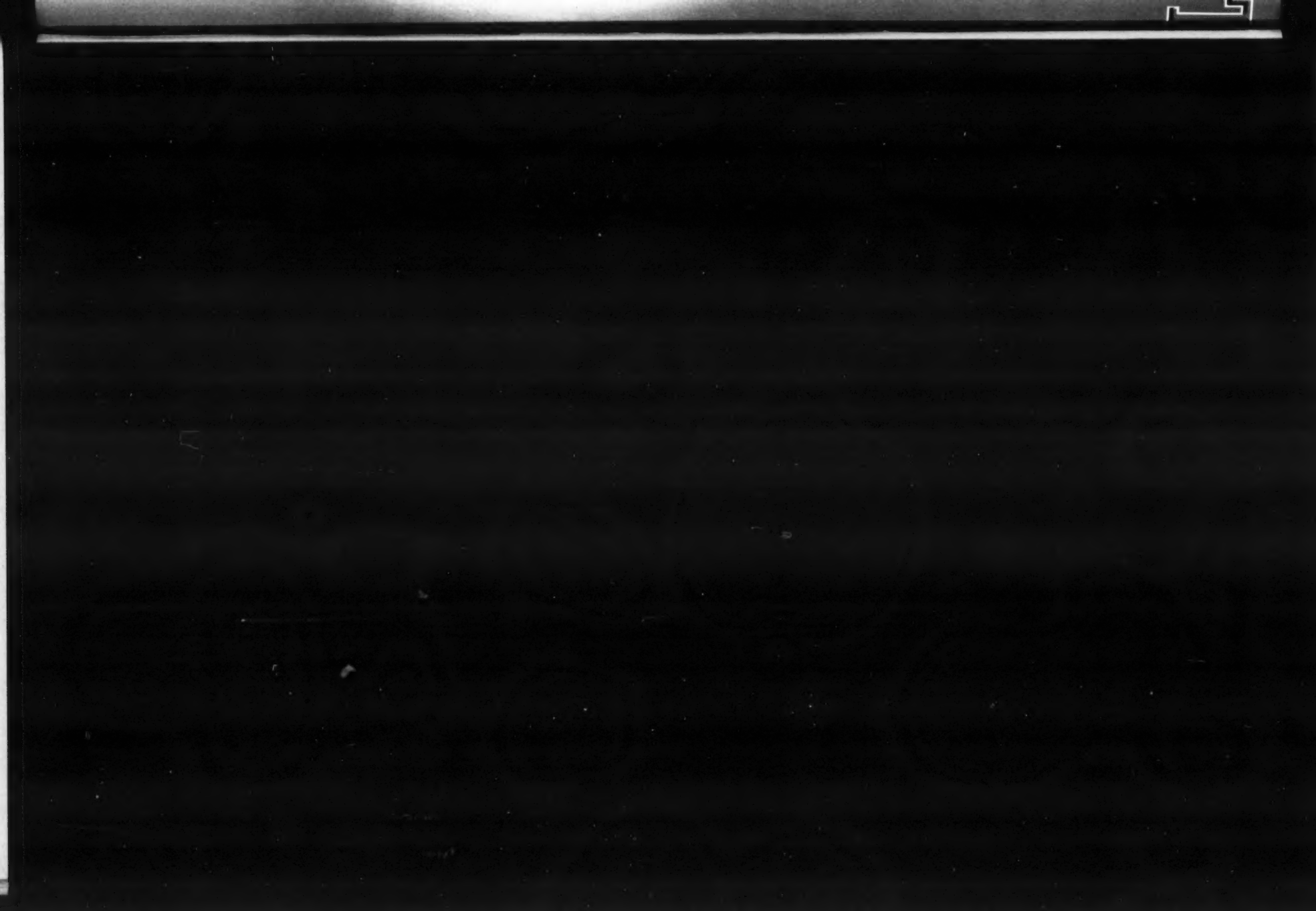

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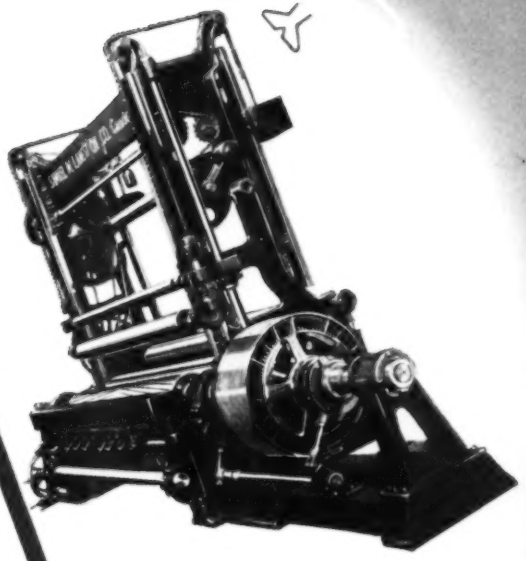

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